

GREEN SUPPLY CHAIN MANAGEMENT AND ORGANIZATIONAL SUSTAINABILITY IN THE MANUFACTURING SECTOR

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Abstract

The study examined the relationship between green supply chain management (GSCM) and organizational sustainability in the manufacturing sector from a conceptual view point. In response to increasing environmental concerns, regulatory pressures, and stakeholder expectations, manufacturing firms are adopting GSCM practices to reduce environmental impact and improve efficiency. The study focused on four main practices such as green procurement, green manufacturing, green distribution, and reverse logistics and linked them to environmental, economic, social, and operational sustainability outcomes. Anchored on the resource-based view, green supply chain management is conceptualized as a strategic capability that enhances long-term competitiveness and sustainable performance. Drawing from recent literature, the study highlights that effective implementation of green supply chain management leads to cost efficiency, waste reduction, improved stakeholder relationships, and regulatory compliance. It also identifies the core gaps, particularly the limited focus on developing economies and the lack of integrated sustainability approaches. The study contributes to existing knowledge by developing a comprehensive conceptual framework that incorporates operational sustainability as an additional dimension. Practical implications emphasized the need for managers, policymakers, and supply chain partners to adopt coordinated and sustainability-driven practices. The framework provides a basis for future empirical studies on green supply chain management and organizational sustainability.

Keywords: Green procurement, green supply chain management, operational sustainability, organizational sustainability.

INTRODUCTION

In recent years, the rising levels of environmental damage, climate change, and the overuse of natural resources have significantly influenced how manufacturing companies operate. Manufacturing processes often involve high energy consumption, waste production, and carbon emissions, which has attracted the attention of governments, regulators, and other stakeholders (Khan et al., 2022). Consequently, organizations are now pressured to examine their operations and adopt more sustainable practices that balance financial objectives with environmental and social responsibilities. This has made organizational sustainability a key strategic goal, particularly in the manufacturing sector, where environmental impacts are more obvious (Sudjono, 2024). In response to these challenges, green supply chain management has emerged as an important approach for improving environmental performance in organizations. It goes beyond traditional supply chain management by including environmentally friendly practices such as green purchasing, sustainable production methods, waste reduction, reverse logistics, and eco-friendly distribution systems (Khan et al., 2024; Ahmad et al., 2024). These practices are designed not only to reduce the negative impact of manufacturing activities on the environment but also to improve efficiency, encourage innovation, and support long-term competitiveness. Therefore, green supply chain management is now seen as a strategic tool for achieving organizational sustainability rather than just a way of meeting environmental regulations.

Though, in spite of the growing importance of green supply chain management, many manufacturing firms, especially in developing countries, still face difficulties in adopting these practices effectively. Some of the major challenges include lack of modern technology, high costs of implementation, weak regulatory systems, low environmental awareness, and resistance to change within organizations (Khan et al., 2024). In countries like Nigeria, where industrial development is often given more priority than environmental protection, the adoption of green supply chain management practices is still limited; this situation increases environmental problems and slows down progress toward sustainable development. It also shows a gap between the expected benefits and what is actually achieved in practice within the manufacturing sector.

Furthermore, most existing studies have focused more on empirical findings related to green supply chain management and performance outcomes, with less attention given to building a strong theoretical understanding of how it drives organizational sustainability. Although previous

research has shown that green supply chain management can improve environmental and financial performance, there is still a need to bring together these ideas into a clear conceptual framework that explains how it leads to sustainability outcomes (Khan et al., 2024; Ahmad et al., 2024). Developing such a conceptual viewpoint is important for strengthening theory and providing a clearer understanding of the relationship between green supply chain management practices and sustainable organizational performance. Furthermore, the growing global focus on sustainability reporting, circular economy practices, and corporate social responsibility has increased the need for organizations to include environmental concerns in their supply chain activities (Mathur, 2025; Sudjono, 2024). Manufacturing firms are now expected to align their operational strategies with sustainability goals while maintaining competitiveness in a dynamic business environment and social impacts throughout their supply chains. This shift has made green supply chain management an important part of strategic management, as organizations try to meet global sustainability standards and satisfy stakeholder expectations.

In view of these issues, this study is driven by the need to examine green supply chain management as a major factor influencing organizational sustainability in the manufacturing sector. By reviewing and combining existing literature and theories, the study aims to provide a better understanding of how green supply chain management practices contribute to sustainability outcomes and to explain the processes through which this happens. In doing so, the study adds to the existing knowledge on sustainable supply chain management and provides useful insights for managers, policymakers, and researchers who are interested in promoting sustainability in manufacturing industries. Overall, the increasing environmental challenges and the limitations of traditional supply chain practices have made it necessary for organizations to adopt greener and more sustainable approaches. Green supply chain management suggests a practical way to achieve organizational sustainability, but its full benefits are not yet fully understood, especially from a conceptual point of view. Therefore, this study addresses this gap by presenting green supply chain management as a driver of sustainability and by providing a theoretical foundation for future research.

Objectives of the Study

This study aims to examine the relationship between green supply chain management and organizational sustainability in the manufacturing sector. Specifically, the study seeks to:

1. Identify the key practices of green supply chain management in manufacturing firms.
2. Examine the link between green supply chain management practices and organizational sustainability outcomes.
3. Explain how green supply chain management contributes to environmental, economic, and social performance.
4. Propose a conceptual framework that links green supply chain management to organizational sustainability.

Significance of the Study

This study is important because it provides a clear conceptual understanding of how Green Supply Chain Management supports organizational sustainability in the manufacturing sector. It offers useful insights for managers by showing how adopting green practices can improve efficiency and long-term performance. The study also assists policymakers by highlighting the need to support environmentally responsible practices within industries. In addition, it serves as a foundation for future research by providing a framework that can be tested empirically. Overall, the study contributes to promoting sustainable development through better supply chain practices.

REVIEW OF RELATED LITERATURE

Conceptual Review

Green Supply Chain Management

Green supply chain management has become an important concept in modern business practice, particularly as organizations respond to growing environmental challenges and sustainability demands. Ideally, green supply chain management refers to the integration of environmental considerations into all stages of supply chain activities, including product design, material sourcing, manufacturing processes, distribution, and end-of-life management. It extends traditional supply chain management by not only focusing on efficiency and cost reduction but also emphasizing environmental responsibility and sustainable resource use (Sarkis, 2020; Hossain, 2025).

Recent literature views green supply chain management as a strategic approach that helps organizations reduce their environmental impact while maintaining operational performance. According to Khan et al. (2024) green supply management involves practices such as green

purchasing, eco-design, cleaner production, and reverse logistics, all of which aim to minimize waste, conserve energy, and reduce emissions. Jo and Kwon (2022) stipulated that these practices which ensure environmental concerns are addressed throughout the entire value chain rather than at a single stage of production. In this sense, GSCM promotes a life-cycle perspective where products are managed from raw material extraction to final disposal. Sajuyigbe et al. (2026) posit that a vital aspect of green supply chain management is green purchasing, which involves selecting suppliers and materials based on environmental criteria. This ensures that inputs used in (Ali et al., 202 Tardin et al., 2024). Reverse logistics is another key component, involving the return, recycling, and reuse of products, thereby supporting a circular economy and creating economic value through cost savings and resource recovery (Hossain, 2025).

Furthermore, green supply chain management enhances organizational sustainability and competitive advantage by improving efficiency, reducing costs, and fostering innovation. It also enables firms to meet regulatory requirements and customer expectations. The use of digital technologies supports effective implementation and performance monitoring (Khan et al., 2024; Sarkis, 2020; Hossain, 2025).

Organizational Sustainability

Organizational sustainability has gained significant attention in recent years as businesses face increasing pressure to operate in a way that supports long-term environmental, social, and economic well-being. Conceptually, organizational sustainability refers to the ability of an organization to maintain its operations and performance over time while minimizing negative impacts on the environment and society. It goes beyond short-term profit-making and focuses on creating long-term value for both the organization and its stakeholders (Bansal & DesJardine, 2019).

Recent studies show, that organizational sustainability is commonly explained through the triple bottom line framework, which includes three main dimensions: environmental sustainability, social sustainability, and economic sustainability. Environmental sustainability involves reducing pollution, conserving natural resources, and adopting eco-friendly practices in business operations. Social sustainability focuses on employee welfare, ethical practices, and contributions to community development, while economic sustainability ensures that the organization remains

financially stable and competitive over time (Sarkis, 2020; Ali et al., 2025). From a conceptual perspective, organizational sustainability is seen as a strategic approach that requires the integration of sustainability principles into core business activities. This means that sustainability is not treated as a separate function but is embedded in decision-making, planning, and daily operations. According to Khan et al. (2024), organizations that adopt sustainability practices are more likely to improve efficiency, reduce costs, and strengthen their reputation, which contributes to long-term success. This highlights the idea that sustainability and performance are closely linked rather than conflicting goals. Organizational sustainability is influenced by both internal and external factors. Internally, leadership commitment, organizational culture, and employee involvement are crucial in driving sustainable practices. Firms with strong leadership support and a sustainability-oriented culture are more likely to implement effective strategies. Externally, government regulations, stakeholder expectations, and global sustainability standards pressure organizations to adopt responsible practices (Tardin et al., 2024; Nasir et al., 2026). Additionally, innovation and technology play a vital role, as digital tools like data analytics and energy-efficient systems help firms monitor environmental impact and improve efficiency. In manufacturing, these technologies enhance waste reduction and resource management (Hossain, 2025). Overall, organizational sustainability reflects.

Debates, and Research Gaps

The contemporary discourse on Green Supply Chain Management (GSCM) underscores its role as a strategic necessity for achieving a delicate balance between economic, environmental, and social objectives. Fundamentally, GSCM encompasses practices designed to ensure that production processes are environmentally benign and that resources are ethically sourced (Srivastava, 2007). Central to this is eco-design, which prioritizes the development of products that minimize ecological footprints through the use of recyclable materials and reduced energy consumption (Yadav & Agarwala, 2011). Furthermore, green manufacturing enhances this framework by promoting efficient production methods that lower pollution and waste generation. Despite these established definitions, the transition from theoretical intent to organizational sustainability is marked by significant debates and scholarly gaps that this study seeks to address. A primary debate in the existing literature concerns the consistency of GSCM in delivering improved sustainability outcomes. While a vast body of research reports positive impacts,

scholars argue that these benefits are often contingent upon specific variables such as firm size, industry type, and regional context (Sarkis, 2020). This variability is particularly pronounced in developing nations characterized by limited infrastructure and resource scarcity (Khan et al., 2024). This complexity extends to the economic dimension, where mixed findings persist regarding cost implications; while some researchers champion green initiatives for reducing operational costs through efficiency gains, others highlight the prohibitive initial investments and process adaptations that create uncertainty for widespread adoption (Ali et al., 2025; Nasir et al., 2026).

Furthermore, several critical gaps limit the current understanding of the field. First, there is a disproportionate emphasis on environmental outcomes such as emission control and waste reduction at the expense of social sustainability (Setyono et al., 2025; Tardin et al., 2024). This lopsided focus provides an incomplete view of organizational sustainability, which should ideally integrate environmental, social, and economic dimensions into a singular system. Second, the field remains heavily empirical, with a notable lack of conceptual studies explaining the underlying mechanisms through which green procurement, distribution, and reverse logistics actually translate into operational and sustainability performance (Ajayi et al., 2021; Hossain, 2025). Finally, much of the scholarship is concentrated in developed economies, leaving regions like Nigeria significantly underexplored (Nasir et al., 2026). These differences in regulatory frameworks and environmental awareness limit the generalisability of existing findings, thereby justifying the need for the more integrated and contextually relevant conceptual framework provided by this study.

Theoretical Review

Resource-Based View Theory

Propounded by Jay Barney (1991), the Resource-Based View (RBV) posits that firms achieve sustained competitive advantage by utilizing valuable, rare, and inimitable resources. Within green supply chain management, practices like eco-friendly production and reverse logistics serve as strategic capabilities that enhance sustainability outcomes. RBV connects to the conceptual framework by demonstrating how these internal green resources drive environmental, economic, social, and operational performance. Adopting this theory is justified as it highlights how

manufacturing firms leverage internal strengths to solve sustainability challenges, minimize environmental impact, and improve efficiency for long-term success.

Institutional Theory

DiMaggio and Powell (1983) propounded Institutional Theory, suggesting that organizations adopt specific practices to gain legitimacy in response to external pressures like regulations, social expectations, and industry norms. In this study, these pressures encourage manufacturing firms to implement green supply chain management practices, such as green procurement and distribution. The theory connects to the framework and research problem by explaining why firms, especially in developing economies, face challenges in adopting green practices and meeting sustainability requirements. Its adoption is justified because it highlights how regulatory forces and stakeholder expectations shape organizational sustainability.

Stakeholder Theory

Edward Freeman (1984) propounded Stakeholder Theory, stating that organizations must consider the interests of all parties including employees, customers, suppliers, regulators, and the community in their decision-making. Within green supply chain management, firms adopt environmentally responsible practices to meet these expectations, reduce social risks, and improve corporate reputation. This theory links to the conceptual framework by connecting green practices to social and operational sustainability outcomes. Its adoption is justified because responding to stakeholder demands is essential in addressing the limited adoption of sustainable practices in manufacturing firms.

Triple Bottom Line Theory

Propounded by John Elkington (1994), the Triple Bottom Line framework focuses on three dimensions of sustainability: environmental, economic, and social performance. In this study, the theory provides a foundation for assessing organizational sustainability outcomes resulting from green supply chain management practices. It aligns with the conceptual model by incorporating environmental, economic, social, and operational dimensions, reflecting the overall impact of green supply chains. Its adoption is justified as it enables a comprehensive evaluation of

sustainability and highlights the broader benefits of green practices beyond financial performance.

Would you like me to help you synthesise how these four theories (RBV, Institutional, Stakeholder, and TBL) collectively support your conceptual framework?

Theoretical Framework

This study is anchored on the Resource-Based View (RBV), propounded by Jay Barney (1991). The theory argues that organizations achieve long-term success by effectively utilizing valuable, rare, and unique internal resources. From this perspective, green supply chain management practices such as green procurement, manufacturing, distribution, and reverse logistics are considered strategic resources that enable manufacturing firms to achieve organizational sustainability. These capabilities allow firms to reduce environmental impact, lower costs, promote social responsibility, and improve operational efficiency. RBV is appropriate for this study because it explains how internal capabilities drive sustainability outcomes. It directly addresses the research problem by demonstrating that firms that effectively manage these green practices are more likely to attain long-term competitive advantage and sustainable growth.

Consequently, the resource-based view provides the theoretical foundation for this study, as it justifies how the integration of green procurement, manufacturing, distribution, and reverse logistics serves as the internal mechanism for achieving superior environmental, economic, social, and operational sustainability.

Conceptual Framework

The conceptual framework illustrates how green supply chain management drives organizational sustainability in manufacturing firms. Adoption of green supply chain management practices green procurement, green manufacturing, green distribution, and reverse logistics enhances environmental, economic, social, and operational sustainability (Ajayi et al., 2021, Khan et al., 2022). Green procurement ensures eco-friendly sourcing, green manufacturing reduces waste and energy use, green distribution lowers emissions, and reverse logistics promotes recycling and reuse. These practices collectively improve efficiency, profitability, employee and community well-being, and internal processes. Aligned with resource based view, institutional, stakeholder, and TBL theories, the framework positions green supply chain management as a strategic mechanism for achieving holistic and long-term organizational sustainability.

METHODOLOGY

This study adopts a conceptual research design, using a comprehensive review and synthesis of recent literature on green supply chain management and organizational sustainability. The methodology is justified because it allows the development of a theoretical framework and conceptual model without primary data collection. By integrating the main practices, dimensions, and theories, this approach provides a solid foundation for understanding how green supply chain management drives sustainability in manufacturing firms and offers guidance for future empirical research.

Discussion

The review of recent literature shows that Green Supply Chain Management (GSCM) plays an important role in improving organizational sustainability in the manufacturing sector. Studies indicate that practices such as green procurement, eco-friendly production, and reverse logistics help firms reduce environmental pollution, improve operational efficiency, and lower production costs (Khan et al., 2024; Ali et al., 2025). These findings suggest that GSCM is no longer only a tool for meeting environmental regulations but has become an important strategy for achieving long-term competitiveness and sustainability. The literature further reveals that environmental responsibility and profitability can work together to strengthen organizational performance.

The findings also show that GSCM has a broad impact on sustainability by improving environmental, economic, social, and operational performance. Firms that adopt green manufacturing practices and proper waste management often experience better resource utilization, improved efficiency, and stronger corporate reputation (Sarkis, 2020). However, the success of GSCM practices largely depends on factors such as organizational capability, access to technology, and supportive government policies. This means that although GSCM offers many benefits, its effectiveness is influenced by the environment in which firms operate.

Another major finding from the literature is that both internal and external factors influence the adoption of GSCM practices. Internal factors such as management commitment, organizational culture, and employee support work together with external pressures like government regulations, stakeholder expectations, and environmental standards to shape sustainability practices (Freeman et al., 2020; DiMaggio & Powell, 1983). This explains why some firms, especially in developing

countries, face challenges in implementing sustainable supply chain practices due to limited resources, weak infrastructure, and low environmental awareness.

Overall, this study contributes to existing knowledge by presenting an integrated framework that links GSCM practices to organizational sustainability through the perspectives of the Resource-Based View, Institutional Theory, Stakeholder Theory, and Triple Bottom Line Theory. The study promotes a broader understanding of sustainability by combining environmental, economic, social, and operational dimensions. It also highlights the unique challenges faced by firms in developing economies and provides a conceptual foundation for future empirical studies in the manufacturing sector.

Practical Implications

The findings of this study have significant implications for various stakeholders.

Manufacturing firms: The study suggests that firms should strategically integrate green supply chain management practices like green procurement, green manufacturing, green distribution, and reverse logistics into their operations. Doing so can reduce environmental impact, lower operational costs, enhance efficiency, improve product quality, and strengthen competitiveness. It also helps firms meet stakeholder expectations and align with global sustainability standards.

Policy makers and regulatory: The findings emphasize the need for policies, incentives, and regulatory frameworks that encourage the adoption of green supply chain practices. Supportive measures can include tax incentives, environmental compliance standards, and funding for sustainable technologies, which will help firms overcome barriers to implementation.

Suppliers and partners: By adopting green supply chain management, suppliers can improve their environmental performance, maintain business relationships with sustainability-conscious manufacturers, and enhance their market reputation.

Academia and researchers: The study provides a conceptual foundation for future empirical research, guiding investigations into the link between green supply chain management practices and sustainability outcomes, particularly in developing economies.

Overall, the findings underscore that coordinated efforts among firms, policymakers, and partners are essential for achieving sustainable manufacturing and long-term economic, environmental, and social benefits.

Summary

This study conceptually examined green supply chain management as a driver of organizational sustainability in the manufacturing sector. Drawing on recent literature, it explored green supply chain management practices like green procurement, green manufacturing, green distribution, and reverse logistics and their impact on environmental, economic, social, and operational sustainability. Anchored on the Resource-Based View (RBV), the study highlighted green supply chain management as a strategic organizational resource that enhances long-term competitiveness. The review identified gaps in empirical research, particularly in developing countries, and emphasized the importance of integrating green supply chain management into operations. The study also provided theoretical and practical insights for managers, policymakers, suppliers, and researchers.

Conclusion

The study concludes that green supply chain management is a critical driver of organizational sustainability in manufacturing firms. Green practices not only reduce environmental harm but also improve operational efficiency, cost-effectiveness, and social responsibility. Anchoring the study on the RBV demonstrates that green supply chain management practices are strategic resources that enable firms to achieve long-term competitiveness and resilience. The conceptual framework developed provides a foundation for understanding how internal capabilities translate into sustainability outcomes. Practically, firms, policymakers, and suppliers can leverage these insights to implement effective sustainability strategies. Future research can empirically test this framework, especially in developing countries, to validate and expand the theory.

Suggestions

Based on the findings and conceptual insights of this study, the following suggestions are made:

1. **For Manufacturing Firms:** Firms should systematically adopt and integrate green supply chain management practices such as green procurement, green manufacturing, green distribution, and reverse logistics into their strategic and operational plans to enhance sustainability performance and competitive advantage.
2. **For Policymakers:** Governments and regulatory bodies should provide incentives, enforce environmental standards, and create policies that encourage sustainable supply chain practices, particularly in developing countries.
3. **For Suppliers and Partners:** Supply chain partners should collaborate with firms to meet environmental standards, implement eco-friendly practices, and adopt circular economy principles.
4. **For Researchers:** Future studies should empirically test the conceptual framework across different industries and contexts, especially in developing economies, to validate and expand the theoretical understanding of green supply chain management and organizational sustainability.

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