Investigating the Effects of Sustainability Initiatives on Supply Chain Resilience and Performance in Indonesia

Ahmad Basuki
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Abstract

Purpose: The aim of the study was to investigating the effects of sustainability initiatives on supply chain resilience and performance.

Methodology: This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low cost advantage as compared to a field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

Findings: The investigation into sustainability initiatives' effects on supply chain resilience and performance revealed significant benefits. Companies that integrated sustainable practices into their supply chain operations experienced improved resilience against disruptions, such as natural disasters or supply chain disruptions. Additionally, these initiatives often led to enhanced operational performance, including cost savings, efficiency improvements, and better relationships with stakeholders. Overall, the findings suggest that integrating sustainability into supply chain management can contribute positively to both resilience and performance outcomes.

Unique Contribution to Theory, Practice and Policy: Resource-based view (RBV) theory, institutional theory & contingency theory may be used to anchor future studies on investigating the effects of sustainability initiatives on supply chain resilience and performance. Practitioners should prioritize the implementation of integrated sustainability strategies that align with organizational goals and supply chain objectives. Policymakers play a critical role in creating an enabling environment for sustainable supply chain management practices.

Keywords: Investigating, Sustainability Initiatives, Supply Chain Resilience, Performance

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INTRODUCTION

Supply chain resilience refers to the ability of a supply chain to withstand and recover from disruptions while maintaining its essential functions. In developed economies like the USA, companies have been increasingly focused on enhancing resilience in their supply chains. For example, a study by PwC found that 85% of surveyed executives in the US reported that their organizations had experienced a supply chain disruption within the past year, highlighting the need for resilience measures (PwC, 2019). One strategy employed by companies in the USA to enhance resilience is diversifying sourcing and manufacturing locations to mitigate risks associated with natural disasters, geopolitical tensions, or trade disputes.

In Japan, another developed economy, supply chain resilience is of utmost importance due to the country's vulnerability to natural disasters such as earthquakes and tsunamis. Japanese companies have invested heavily in technologies such as real-time monitoring systems and predictive analytics to detect potential disruptions early and implement timely countermeasures. For instance, a study published in the International Journal of Production Economics found that Japanese manufacturing firms have significantly improved their supply chain resilience through investments in technology and collaboration with suppliers (Matsuo, 2017). This demonstrates the proactive approach taken by companies in Japan to enhance their supply chain resilience and performance.

In developing economies like China, supply chain resilience has become increasingly important as companies seek to mitigate risks associated with factors such as political instability, infrastructure deficiencies, and economic volatility. For example, Chinese manufacturers have been investing in technologies like blockchain and Internet of Things (IoT) to enhance supply chain visibility and traceability, thereby reducing the impact of disruptions. Additionally, collaboration with suppliers and the development of alternative sourcing options have become common strategies to build resilience in the face of uncertainties. In developing economies like China, supply chain resilience has become increasingly important as companies seek to mitigate risks associated with factors such as political instability, infrastructure deficiencies, and economic volatility. For example, a study by Wang, Zhao, and Sarkis (2016) highlights the importance of building resilience in the Chinese supply chain, particularly in the face of disruptions caused by natural disasters and geopolitical tensions. Chinese manufacturers have been investing in technologies like blockchain and Internet of Things (IoT) to enhance supply chain visibility and traceability, thereby reducing the impact of disruptions (Zhang, 2020). Additionally, collaboration with suppliers and the development of alternative sourcing options have become common strategies to build resilience in the face of uncertainties (Wang, 2016).

In China, which is one of the world's largest manufacturing hubs, supply chain resilience has become increasingly important as the country faces risks such as labor shortages, environmental regulations, and geopolitical tensions. Chinese companies have been investing in technologies such as automation and digitalization to improve supply chain visibility and agility. Additionally,
China's Belt and Road Initiative (BRI) aims to enhance connectivity and infrastructure development across Asia, Africa, and Europe, which can improve supply chain resilience by diversifying transportation routes and reducing dependency on specific regions (Xie, Liu & Shang, 2020).

Similarly, in India, supply chain resilience is critical due to factors such as infrastructure challenges, regulatory complexity, and geopolitical tensions with neighboring countries. Indian companies are adopting strategies such as implementing robust risk management frameworks, enhancing collaboration with suppliers, and leveraging technology solutions like blockchain and artificial intelligence to strengthen their supply chains. Additionally, initiatives such as "Make in India" aim to boost domestic manufacturing capabilities, reducing reliance on imports and enhancing supply chain resilience (Krishnamurthy & Singh, 2016).

In sub-Saharan African economies, supply chain resilience is often challenged by factors such as inadequate infrastructure, limited access to technology, and political instability. However, there have been efforts to improve resilience through initiatives such as regional integration and investment in infrastructure development. For instance, the African Union's Continental Free Trade Area (AfCFTA) aims to create a single market for goods and services within the continent, thereby reducing dependency on external suppliers and enhancing resilience (WTO, 2021). Furthermore, organizations in sub-Saharan Africa are increasingly adopting digital solutions such as mobile payment systems and cloud-based supply chain platforms to improve efficiency and resilience in their operations (UNCTAD, 2020). These efforts reflect a growing recognition of the importance of supply chain resilience in driving economic growth and development in the region.

For example, in Brazil, supply chain resilience is crucial due to factors such as political instability, infrastructure constraints, and environmental risks like deforestation and extreme weather events. Brazilian companies have been investing in technologies like GPS tracking and data analytics to improve supply chain visibility and risk management. Furthermore, initiatives to promote sustainable practices, such as the Amazon Sustainable Landscape Program, aim to mitigate environmental risks and enhance the resilience of supply chains dependent on the region (Dias, Oliveira & Godinho Filho, 2018).

In South Africa, another developing economy, supply chain resilience is impacted by factors such as transportation infrastructure limitations, labor strikes, and political uncertainty. South African companies have been exploring strategies such as establishing alternative transportation routes, strengthening relationships with local suppliers, and investing in supply chain risk management systems. Moreover, collaborations between government agencies, industry associations, and academic institutions aim to address systemic challenges and enhance the overall resilience of the country's supply chains (Mafini & Mavundla, 2021).

Indonesia faces challenges such as infrastructure limitations, geographical diversity, and regulatory complexities. Supply chains in Indonesia are particularly vulnerable to natural disasters.
such as earthquakes, volcanic eruptions, and floods. Indonesian companies have been adopting strategies such as inventory optimization, decentralized manufacturing, and investing in disaster preparedness and recovery plans to enhance resilience. Additionally, initiatives like the National Logistics Ecosystem (NLE) aim to improve coordination among stakeholders and streamline logistics processes, thereby bolstering supply chain resilience and performance (Jatmiko, Rahmawati & Irianto, 2021).

In Nigeria, supply chain resilience is affected by factors such as inadequate transportation infrastructure, security risks, and political instability. Nigerian companies have been implementing measures such as supply chain diversification, enhanced security protocols, and digitalization of logistics operations to mitigate risks and improve efficiency. Furthermore, collaborations between the public and private sectors, as seen in initiatives like the Presidential Enabling Business Environment Council (PEBEC), aim to address systemic challenges and create a more conducive environment for business operations. By strengthening supply chain resilience, Nigerian companies can better navigate the uncertainties and disruptions prevalent in the country’s operating environment (Adeleye, Abolaji & Ojebiyi, 2020).

The implementation of sustainability initiatives and practices across the supply chain is crucial for enhancing both supply chain resilience and performance. One key implementation strategy is the adoption of green procurement practices, where organizations prioritize sourcing materials and products from suppliers that adhere to environmentally friendly standards and practices. By promoting sustainability throughout the procurement process, companies can reduce environmental impacts, lower carbon emissions, and minimize resource depletion, ultimately enhancing supply chain resilience by mitigating risks associated with climate change, regulatory compliance, and resource scarcity (Sarkis, 2010). Additionally, green procurement can lead to cost savings through improved resource efficiency and reduced waste generation, thereby enhancing supply chain performance and competitiveness in the long term (Srivastava, 2007).

Another crucial implementation strategy is the development of sustainable transportation and logistics practices within the supply chain. This involves optimizing transportation routes, utilizing alternative fuels and modes of transportation, and implementing efficient logistics processes to minimize carbon emissions and reduce environmental footprint (Seuring & Müller, 2008). Sustainable transportation not only contributes to environmental conservation but also enhances supply chain resilience by reducing dependency on fossil fuels and mitigating risks associated with fuel price volatility and regulatory changes. Moreover, efficient transportation and logistics practices lead to faster delivery times, lower transportation costs, and improved customer satisfaction, thereby enhancing overall supply chain performance (Sarkis & Cohen, 2016).

**Problem Statement**

While there is increasing recognition of the importance of sustainability initiatives in supply chain management, there remains a gap in understanding the specific effects of these initiatives on supply
chain resilience and performance. Despite the growing adoption of sustainability practices, there is limited empirical evidence on how they impact the ability of supply chains to withstand disruptions and maintain operational efficiency. Existing research has primarily focused on the environmental and social benefits of sustainability initiatives, but there is a need for more comprehensive studies that examine their implications for supply chain resilience and performance in a holistic manner. Moreover, the dynamic nature of supply chain environments, characterized by evolving market conditions, regulatory changes, and technological advancements, necessitates ongoing investigation into the effectiveness of sustainability initiatives in enhancing supply chain resilience and performance (Miao, 2020).

**Theoretical Framework**

**Resource-Based View (RBV) Theory**

Originated by Jay Barney in the 1990s, the Resource-Based View (RBV) theory focuses on how firms can achieve sustained competitive advantage by leveraging their unique resources and capabilities. According to RBV, resources that are valuable, rare, inimitable, and non-substitutable (VRIN) can serve as sources of competitive advantage. In the context of investigating the effects of sustainability initiatives on supply chain resilience and performance, RBV theory is relevant because it highlights the importance of sustainable resources and capabilities in enhancing supply chain resilience and performance. Sustainable practices and initiatives can be considered valuable resources that contribute to a firm's competitive advantage by improving operational efficiency, reducing costs, and mitigating risks (Barney, 1991).

**Institutional Theory**

Originating from the works of Meyer and Rowan in the 1970s, Institutional Theory focuses on how organizations conform to institutional pressures and norms within their environment. According to Institutional Theory, organizations adopt certain practices and behaviors to gain legitimacy and legitimacy in their institutional environment. In the context of investigating the effects of sustainability initiatives on supply chain resilience and performance, Institutional Theory is relevant because it emphasizes the role of institutional pressures, such as regulatory requirements and stakeholder expectations, in driving organizations to adopt sustainable practices in their supply chains. By conforming to sustainability norms and expectations, organizations can enhance their reputation, build trust with stakeholders, and improve supply chain resilience and performance (Meyer & Rowan, 1977).

**Contingency Theory**

Originating from the works of Chandler in the 1960s, Contingency Theory posits that there is no one-size-fits-all approach to management, and the effectiveness of organizational practices depends on the specific context and circumstances. According to Contingency Theory, organizations must adapt their strategies and practices to fit the unique requirements of their
environment. In the context of investigating the effects of sustainability initiatives on supply chain resilience and performance, Contingency Theory is relevant because it highlights the importance of considering contextual factors, such as industry characteristics, geographic location, and organizational culture, when implementing sustainability initiatives. By understanding the contingencies that influence the effectiveness of sustainability practices, organizations can tailor their approaches to enhance supply chain resilience and performance (Chandler, 1962).

**Empirical Review**

Pagell and Wu (2019) conducted a longitudinal analysis spanning over five years to examine the impact of sustainability initiatives on supply chain resilience and performance within the manufacturing sector. Their study involved collecting extensive survey data from a diverse sample of manufacturing firms, allowing for a comprehensive assessment of sustainability practices and their effects on various performance metrics. The findings of the study revealed that companies that actively integrated sustainability initiatives into their supply chain management processes experienced notable improvements in both resilience and performance. Specifically, these companies reported reductions in costs associated with waste and inefficiencies, while also achieving higher levels of customer satisfaction. Based on these findings, the authors recommend that manufacturing firms prioritize the adoption of sustainability practices as a strategic approach to enhance their long-term competitiveness and resilience in the marketplace.

Kannan (2017) investigated into the relationship between sustainability practices, supply chain resilience, and financial performance within the electronics industry. Through the utilization of advanced statistical techniques such as structural equation modeling, the researchers analyzed survey data collected from a wide range of electronics manufacturing companies. Their rigorous analysis revealed a significant positive association between the adoption of sustainability practices and both supply chain resilience and financial performance. Companies that implemented sustainability initiatives demonstrated greater flexibility and adaptability in responding to disruptions, while also achieving improved financial outcomes. Building upon these findings, the authors advocate for electronics companies to prioritize sustainability initiatives as a means to strengthen their competitive position and drive sustainable growth in the industry.

Wang (2016) examined of the effects of sustainability initiatives on supply chain resilience and performance within the food industry. Employing a holistic approach, the researchers conducted a series of detailed case studies involving multiple food supply chains to assess the implementation of sustainability practices and their impact on resilience and performance outcomes. The findings of the study revealed compelling evidence that companies integrating sustainability into their supply chain management processes exhibited greater levels of resilience and improved performance metrics. These companies were able to reduce waste, enhance operational efficiency, and cultivate stronger relationships with stakeholders, ultimately leading to improved brand reputation and financial performance. In light of these findings, the authors recommend that food
companies invest in sustainability initiatives as a strategic imperative to enhance their long-term competitiveness and sustainability within the industry.

Govindan (2018) investigated into the relationship between environmental sustainability practices, supply chain resilience, and operational performance within the automotive industry. Through a combination of cross-sectional surveys and regression analysis, the researchers examined how sustainability practices influence resilience and operational outcomes across automotive supply chains. Their findings revealed a robust positive impact of environmental sustainability practices on both supply chain resilience and operational performance. Companies that embraced sustainability initiatives demonstrated greater agility and responsiveness in managing disruptions, while also achieving higher levels of operational efficiency and cost-effectiveness. Drawing upon these findings, the authors advocate for the widespread adoption of sustainability initiatives as a strategic imperative to drive sustainable growth and resilience within the automotive sector.

Dubey (2019) assessed the impact of green supply chain practices on supply chain resilience and organizational performance within the healthcare sector. Employing a mixed-methods approach, the researchers combined survey data collection with detailed case studies of healthcare organizations to examine the implementation of green supply chain practices and their effects on resilience and performance outcomes. The findings of the study revealed a clear positive relationship between the adoption of green supply chain practices and both supply chain resilience and organizational performance. Companies that embraced green practices demonstrated greater flexibility and adaptability in responding to disruptions, while also achieving higher levels of operational efficiency and cost-effectiveness. Building upon these findings, the authors recommend that healthcare organizations prioritize the adoption of green supply chain practices as a strategic imperative to drive sustainable growth and resilience within the sector.

Jabbour (2018) investigated into the influence of environmental sustainability initiatives on supply chain resilience and performance within the textile and apparel industry. Through a comprehensive review of existing literature and a meta-analysis of empirical studies, the researchers synthesized findings to examine the relationship between sustainability practices, resilience, and performance within the industry. Their meta-analysis revealed a robust positive association between the adoption of environmental sustainability initiatives and both supply chain resilience and performance metrics. Companies that embraced sustainability initiatives demonstrated greater levels of flexibility and responsiveness in managing disruptions, while also achieving higher levels of operational efficiency and cost-effectiveness. Based on these findings, the authors advocate for textile and apparel companies to prioritize the adoption of sustainability initiatives as a strategic imperative to drive sustainable growth and resilience within the industry.

Trindade (2017) explored the effects of social sustainability practices on supply chain resilience and performance within the agri-food industry. Through detailed case studies of agri-food supply chains, the researchers examined the implementation of social sustainability practices and their impact on resilience and performance outcomes. The findings of the study revealed compelling
evidence that companies prioritizing social sustainability initiatives demonstrated greater levels of resilience and improved performance metrics. These companies were able to cultivate stronger relationships with stakeholders, enhance brand reputation, and achieve higher levels of operational efficiency and cost-effectiveness. Drawing upon these findings, the authors recommend that agri-food companies integrate social sustainability practices into their supply chain management strategies as a strategic imperative to drive sustainable growth and resilience within the industry.

METHODOLOGY

This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low-cost advantage as compared to field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

FINDINGS

The results were analyzed into various research gap categories that is conceptual, contextual and methodological gaps

Conceptual Gap: While the studies provide empirical evidence on the positive relationship between sustainability initiatives and supply chain resilience/performance across different industries, there is a lack of a comprehensive conceptual framework that integrates various dimensions of sustainability practices and their effects on resilience and performance. Specifically, there is a need for theoretical development that elucidates the underlying mechanisms through which sustainability initiatives contribute to enhanced resilience and performance within supply chains. Such a framework would help researchers and practitioners better understand the complex interactions between sustainability practices and supply chain outcomes, guiding future research and practice in this area. For instance, Pagell and Wu's (2019) longitudinal analysis within the manufacturing sector could benefit from a conceptual framework that identifies key drivers and moderators of the relationship between sustainability initiatives and supply chain resilience and performance.

Contextual Gap: The studies primarily focus on specific industries such as manufacturing, electronics, food, automotive, healthcare, textile, apparel, and agri-food. However, there is limited research exploring the effects of sustainability initiatives on supply chain resilience and performance across other industries or in different geographical contexts. For instance, studies examining the impact of sustainability practices in service-oriented industries or in emerging markets are scarce. Exploring how contextual factors such as industry characteristics, regulatory environments, and cultural norms influence the relationship between sustainability initiatives and supply chain outcomes would provide valuable insights into the generalizability and applicability of findings across diverse contexts. Kannan's (2017) investigation within the electronics industry could be expanded to include comparative analyses across multiple industries to identify industry-
specific and context-specific effects of sustainability initiatives on supply chain resilience and performance.

**Geographical Gap:** The studies predominantly focus on supply chains operating in developed economies, with limited attention given to supply chains in developing or emerging economies. Investigating the effects of sustainability initiatives on supply chain resilience and performance in different geographical regions is crucial, as the challenges and opportunities faced by supply chains vary significantly across different contexts. Research conducted in developing economies can shed light on unique factors influencing the adoption and effectiveness of sustainability practices, such as resource constraints, infrastructure limitations, and socio-economic dynamics. Addressing this geographical gap would contribute to a more comprehensive understanding of the global implications of sustainability initiatives on supply chain resilience and performance. For instance, Trindade's (2017) exploration within the agri-food industry could be expanded to include case studies from diverse geographical regions to capture variations in the effects of social sustainability practices on supply chain resilience and performance.

**CONCLUSION AND RECOMMENDATIONS**

**Conclusion**

In conclusion, the investigation into the effects of sustainability initiatives on supply chain resilience and performance represents a critical area of research and practice in the field of supply chain management. Sustainability initiatives have the potential to not only mitigate environmental and social risks but also enhance supply chain resilience and performance. Through this investigation, we have highlighted the need for a comprehensive understanding of the complex relationships between sustainability practices and various dimensions of supply chain resilience, such as flexibility, adaptability, and robustness. Furthermore, we have emphasized the importance of integrating theory, practice, and policy to drive meaningful change and create sustainable and resilient supply chains.

Moving forward, it is essential for researchers, practitioners, and policymakers to collaborate and leverage interdisciplinary approaches to advance knowledge and drive innovation in sustainable supply chain management. By developing theoretical frameworks that explicitly link sustainability initiatives to supply chain resilience and performance, scholars can provide valuable insights into the strategic integration of sustainability practices into supply chain management strategies. Practitioners should prioritize the implementation of integrated sustainability strategies that align with organizational goals and supply chain objectives, while policymakers should create an enabling environment for sustainable supply chain practices through regulations and incentives. Together, these efforts can contribute to the creation of more sustainable, resilient, and responsible supply chains that deliver value to society, the environment, and the economy.
Recommendations

Theory

Future research should aim to develop theoretical frameworks that explicitly link sustainability initiatives to supply chain resilience and performance. This involves conducting longitudinal studies to examine the causal relationships between sustainability practices and various dimensions of supply chain resilience, such as flexibility, adaptability, and robustness. Additionally, researchers should explore the underlying mechanisms through which sustainability initiatives influence supply chain performance metrics, such as cost efficiency, customer satisfaction, and market competitiveness. By advancing theoretical understanding in this area, scholars can provide valuable insights into the strategic integration of sustainability into supply chain management practices.

Practice

Practitioners should prioritize the implementation of integrated sustainability strategies that align with organizational goals and supply chain objectives. This involves conducting comprehensive assessments of current sustainability practices and identifying areas for improvement across the entire supply chain network. Companies should actively engage with suppliers, customers, and other stakeholders to foster collaboration and knowledge sharing around sustainability initiatives. Moreover, organizations should invest in technology solutions and data analytics capabilities to monitor and evaluate the impact of sustainability initiatives on supply chain resilience and performance in real-time. By adopting a proactive and holistic approach to sustainability, companies can enhance operational efficiency, mitigate risks, and create long-term value for all stakeholders.

Policy

Policymakers play a critical role in creating an enabling environment for sustainable supply chain management practices. Governments should develop regulations and incentives that encourage companies to adopt environmentally friendly and socially responsible business practices. This may include tax incentives for investments in renewable energy, carbon pricing mechanisms to internalize environmental externalities, and certification programs to promote transparency and accountability in supply chains. Moreover, policymakers should invest in infrastructure development and research initiatives that support sustainable transportation and logistics practices. By aligning policy goals with sustainability objectives, governments can foster a conducive regulatory framework that promotes sustainable supply chain practices and drives positive social and environmental outcomes.
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