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## Challenges in Supply Chain Management for MSMEs in Maintaining Financial Stability in the Digital Era

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### Article Information

Received: 21-11-2024

Revised: 28-11-2024

Published: 05-12-2024

### Keywords

*Supply chain management, micro, small, and medium enterprises, supplier diversification, digital technology adoption, financial stability*

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### Abstract

Micro, Small, and Medium Enterprises (MSMEs) play a strategic role as a cornerstone of the economy in various countries, including Indonesia. However, the era of globalization and digitalization presents complex challenges in supply chain management that threaten the financial stability of MSMEs. Some of the key issues faced include dependency on single suppliers, limited access to digital technology, minimal transparency within the supply chain, and rapidly changing global market dynamics. These obstacles often lead to uncertainty in inventory management, increased operational costs, and reduced production efficiency. This article not only identifies these challenges but also provides an in-depth analysis of their impact on the sustainability of MSMEs. Using a solution-based approach, the article offers practical strategies such as supplier diversification to mitigate dependency risks, digital technology integration to enhance supply chain efficiency, and collaboration within supply chain ecosystems to create stronger synergies. Furthermore, the article discusses the role of governments and business communities in supporting digital infrastructure development and providing training for MSMEs to adapt to technological changes. To illustrate the implementation of these strategies, the article includes flowcharts, graphs, and real-world case analyses as practical guides for MSMEs. With this approach, MSMEs are expected to maintain financial stability, improve competitiveness, and achieve sustainable growth amidst the challenges of globalization and digital transformation.

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## 1. Introduction

Globalization has created a more dynamic market where business players, including Micro, Small, and Medium Enterprises (MSMEs), must compete not only locally but also internationally (Naradda Gamage et al., 2020). For MSMEs, the global market dynamics bring significant challenges in supply chain management (Singh & Kumar, 2020). Dependency on single suppliers and limited access to digital technology often become obstacles in maintaining the smooth flow of raw materials, ultimately affecting their financial stability. Without effective supply chain management, MSMEs are vulnerable to fluctuations in raw material prices, shipping delays, and market uncertainty.

These issues are compounded by the low adoption of digital technology among MSMEs. Most MSMEs still rely on traditional methods for inventory recording and supply chain management (R. R. Panigrahi et al., 2024). This not only reduces operational efficiency but also increases the risk of human error. In a global market characterized by intense competition, such weaknesses can lead to significant financial losses and even threaten business sustainability (Reuter et al., 2010; Teece, 2007).

Research on supply chain management for MSMEs is crucial to understand how this sector can address globalization challenges (S. S. Panigrahi & Rao, 2018). However, analysis gaps show that most studies focus on large companies with abundant resources. MSMEs, with their unique characteristics such as limited capital, small-scale operations, and lack of access to technology, are often overlooked. This creates a pressing need for strategies specifically designed to help MSMEs manage their supply chains more effectively.

This article contributes by identifying specific challenges faced by MSMEs in supply chain management and offering practical, data-driven solutions. By including illustrations, case studies, and relevant literature, this article aims to provide a practical guide for MSMEs to maintain financial stability and sustain their businesses amidst global market pressures.

## **2. Research Method**

This study employs a literature review method to analyze theories and practices related to supply chain management challenges for MSMEs and strategies to maintain financial stability in the digital era. The literature review draws from various secondary sources, including academic journals, books, industry reports, and credible online articles. These sources explore themes such as supply chain efficiency, supplier diversification, digital technology adoption, and the economic sustainability of MSMEs.

The literature review focuses on three key areas:

a. **Supplier Diversification and Risk Mitigation**

This section examines the importance of supplier diversification for MSMEs in reducing dependency on single suppliers. It explores strategies to mitigate risks associated with supply chain disruptions, such as price fluctuations and delays, and highlights case studies of MSMEs that successfully implemented supplier diversification strategies.

b. **Digital Technology Adoption in Supply Chain Management**

This section investigates how digital tools, such as cloud-based supply chain management systems, improve operational efficiency and decision-making. The literature reviews metrics such as real-time monitoring, inventory management, and cost reduction. Case studies are analyzed to demonstrate how technology adoption enhances supply chain resilience and competitiveness.

c. **Role of Stakeholders in Supporting Supply Chain Optimization**

This section focuses on the roles of governments, logistics providers, and supporting organizations in facilitating supply chain transformation. Key areas include policies for MSME support, infrastructure development, and partnerships that assist MSMEs in accessing resources and expanding market reach.

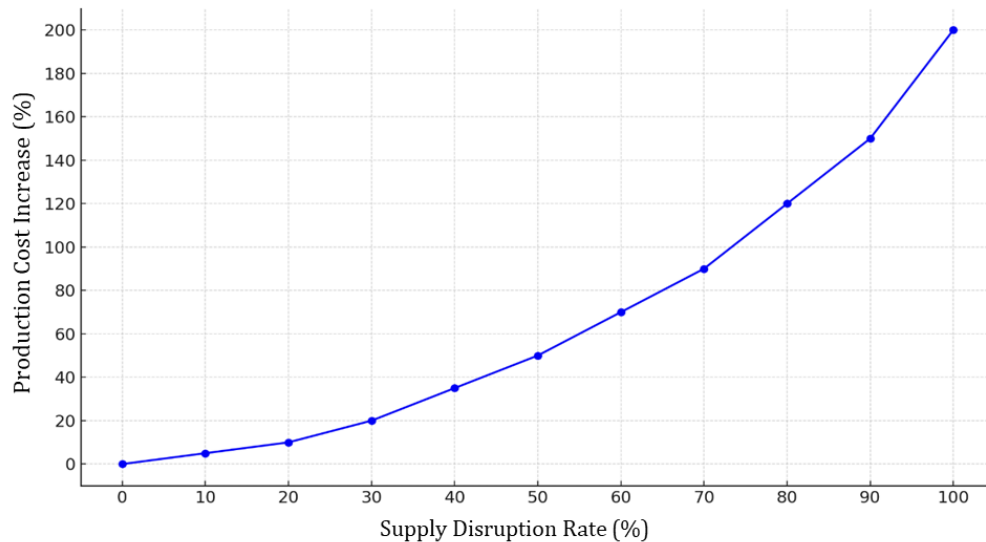
This study aims to provide a comprehensive understanding of how MSMEs can address supply chain challenges through practical strategies and collaborative efforts, enhancing their competitiveness and financial stability in a global market.

## **3. Results and Discussion**

Supply chain management is one of the critical aspects of MSME operations but also one of the most complex and challenging areas (Singh & Kumar, 2020). One of the main challenges is the dependency on single suppliers. This dependency makes MSMEs vulnerable to supply chain disruptions, such as raw material price increases, shipping delays, or even the cessation of operations by suppliers. As a result, MSMEs often experience unexpected production cost spikes, directly impacting their financial stability.

Another challenge is the limited access to modern technology that can improve supply chain efficiency (Kache & Seuring, 2017). Most MSMEs still rely on manual methods for inventory management, transaction recording, and raw material planning (Nugroho & Firmanto, 2024). These methods not only consume time but also increase the risk of human errors. In the digital era, utilizing technologies such as cloud-based supply chain management (SCM) systems can be a solution, but the costs are often unaffordable for small and micro-scale MSMEs.

The following graph illustrates the relationship between the level of supply chain disruptions (%) and production cost increases (%) for MSMEs. The data shows that as supply chain disruptions become more significant, the resulting increase in production costs becomes more pronounced. The trend reveals an exponential rise in costs, where minor disruptions have a moderate impact, but larger disruptions can drastically inflate production costs. This graph highlights the importance of supply chain stability in maintaining the operational efficiency and profitability of MSMEs, especially in a global economy filled with challenges.



*Fig 1. Impact of supply disruptions on production Source: (Bhattacharya et al., 2023; Maisaroh, 2021; Miranti & Santosa, 2024)*

The graph illustrates the relationship between the level of supply chain disruptions and production cost increases. In general, the graph shows an exponential increase in production costs as the level of supply chain disruptions grows. At low levels of disruptions (0-20%), production cost increases remain relatively small and manageable. However, as disruptions rise to moderate and high levels (50-70%), production cost increases become significant, exceeding 80%. At extremely high levels of disruption (close to 100%), production costs skyrocket, reaching over 200%. This graph highlights the substantial impact of MSME dependency on stable supplies, which often leads to cost surges during disruptions such as delivery delays or distribution halts. Global market dynamics also pose additional challenges for MSMEs. Market demand uncertainties, exchange rate fluctuations, and changes in international regulations frequently complicate long-term strategic planning for MSMEs. Moreover, competition with large companies that have scale advantages forces MSMEs to find ways to remain competitive despite their limited resources.

To address these challenges, MSMEs need to implement tailored strategies to optimize their supply chains. One effective strategy is supplier diversification. By working with multiple alternative suppliers, MSMEs can reduce the risks of dependency on a single party. Diversification also allows MSMEs to procure raw materials at more competitive prices, helping to maintain their financial stability.

Adopting digital technology is another strategic step (Fitzgerald et al., 2014). Cloud-based supply chain management systems enable MSMEs to monitor the flow of goods and information in real-time (Maheshwari et al., 2021). This technology not only enhances operational efficiency but also supports data-driven decision-making (Awan et al., 2021). For example, applications like SAP Business One or Odoo offer features for inventory management, shipment tracking, and integrated raw material planning.

The next step is evaluating and selecting new suppliers, where alternative suppliers are assessed based on specific criteria such as price, quality, and reliability. Once a new supplier is selected, the business proceeds with negotiations and new contracts to ensure mutually beneficial agreements. After the contract is finalized, the new supplier is integrated into the company's supply chain management (SCM) system to ensure smooth logistics and communication.

The final step is monitoring and periodically evaluating the performance of new suppliers. This ensures that suppliers meet the standards set and maintain a long-term working relationship. With this strategy, businesses can reduce supply chain risks, lower costs, and enhance competitiveness in the market.

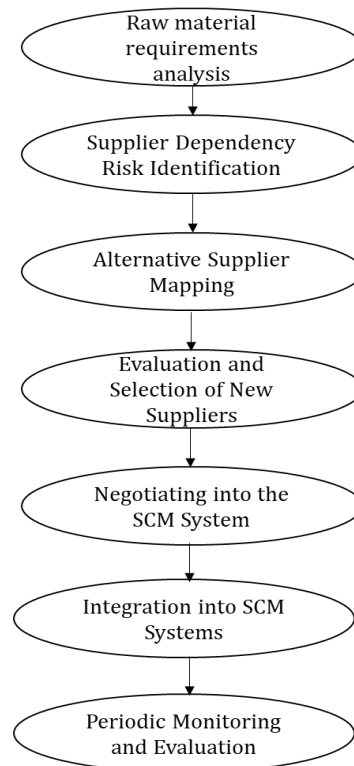


Fig 2. Supplier Diversification Strategy Source: (Christopher, 2022; Mollov, 2020)

The flowchart above outlines the steps of a supplier diversification strategy to improve efficiency and reduce the risks of dependency on a single supplier. The process begins with an analysis of raw material needs to identify the quantity and types of materials required by the company. Next, an assessment of supplier dependency risks is conducted, which involves analyzing the potential supply disruptions from a single supplier. Based on this analysis, the company maps alternative suppliers to find others who can meet the raw material needs with equal or better quality.

Collaboration within the supply chain ecosystem also becomes an important solution. MSMEs can work with logistics companies or supporting organizations to optimize product distribution. Such partnerships can help MSMEs reduce logistics costs, expand market reach, and improve their competitiveness in the global market.

#### 4. Conclusion

Effective supply chain management is a fundamental pillar in maintaining the financial stability of MSMEs, especially amid the challenges of a global market filled with uncertainties. Strategies such as supplier diversification, digital technology adoption, and collaboration within the supply chain ecosystem not only enhance operational efficiency and reduce costs but also strengthen MSMEs' competitiveness to survive in the digital economy era.

However, the successful implementation of these strategies requires synergy from various stakeholders. Government support through pro-MSME policies, technology providers offering affordable and accessible solutions, and financial institutions facilitating innovative financing are key. Additionally, enhancing digital infrastructure, providing training for human resources, and offering technology subsidies can accelerate comprehensive digital transformation.

With a well-planned approach and adequate support, MSMEs can manage their supply chains more efficiently and robustly. This enables them to navigate global market uncertainties while opening opportunities to grow as competitive players in both national and international markets. Consequently, MSMEs can become key drivers in promoting an inclusive and sustainable economy.

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