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RISK MITIGATION STRATEGIES IN GLOBAL SUPPLY CHAINS: A LITERATURE REVIEW

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Abstract

This study examines risk mitigation strategies implemented in global supply chains through a comprehensive literature review. By identifying the best practices and most effective approaches, this study reveals that diversification of suppliers and resources, the use of advanced technologies such as big data, IoT, and blockchain, as well as the development of contingency plans and continuous audits are key pillars in managing supply chain risks. The implementation of these strategies not only increases a company's operational flexibility and transparency, but also enables faster and more accurate responses to potential disruptions, thus ensuring operational resilience and sustainability in the face of dynamic global challenges.
Keywords: Strategy, Risk Mitigation, Global Supply Chain.

Introduction

Since the rapid development of the globalisation era, global supply chains play a very vital role in supporting international business activities. A global supply chain is a complex and coordinated network of processes and entities operating across multiple countries to manage the flow of goods, services, information, and finance from the point of origin of raw materials to the finished product in the hands of the end consumer (Inomata & Hanaka, 2021). In global supply chains, companies work with suppliers, manufacturers, distributors, and retailers in different parts of the world, leveraging the competitive advantages of each location, such as access to quality raw materials, skilled labour, cutting-edge technology, and various logistics infrastructure. The goal is to create added value through efficient and effective management of the movement of products and information along distribution channels, while overcoming challenges such as cultural differences, international trade regulations, currency fluctuations, and geopolitical risks (Prawitasari, 2020).

Supply chains encompass various stages of production and distribution that involve cross-border co-operation, from the procurement of raw materials to the delivery of the final product to consumers. Global supply chains play a crucial role in the modern economy by helping companies optimise production and distribution efficiently and effectively around the world (Kalshan, 2024). Through complex and integrated

networks, companies can access raw materials and components from different parts of the world at a lower cost, increasing their competitiveness and ability to offer products at more affordable prices to consumers. In addition, global supply chains enable companies to adapt quickly to changes in market demand and technology, accelerate innovation, and improve the quality and diversity of products available in the global market (Ogunranti & Banerjee, 2022). Therefore, the sustainability and efficiency of global supply chains not only impact company profitability, but also contribute significantly to global economic growth by connecting markets and creating jobs in different countries. However, this globalisation also brings with it an increase in complexity and interconnectivity, which results in an increase in various types of risks faced by supply chain actors (Krishnan et al., 2021).

Among these risks are operational risks, such as disruptions in production or distribution, financial risks, including currency fluctuations and changes in raw material prices, and political risks, such as trade restrictions and unpredictable tariff policies. Furthermore, environmental challenges, such as climate change and natural disasters, can also result in significant disruptions in the supply chain (Mishra et al., 2023).

Poorly managed risks can result in adverse consequences, such as delivery delays, increased operating costs, and diminished company reputation. Therefore, companies are required to develop effective risk mitigation strategies to maintain continuity of operations and maintain a competitive advantage in the global market (Shbikat, 2021).

Although a number of studies have addressed aspects of risk management in supply chains, there is still a great need for a deeper understanding of specific strategies that can be applied in various business contexts and dynamic market conditions. Through this literature review, it is hoped to identify risk mitigation strategies that have proven effective and present best practices for industry players to adopt. This research aims to add academic insights and provide practical guidance for professionals in the field of supply chain management to face increasingly complex and dynamic challenges.

Research Methods

The study in this research uses the literature method. The literature research method is a systematic and comprehensive approach used to identify, evaluate, and synthesise existing research related to a particular topic. This step involves various processes such as searching for relevant literature through academic databases, scientific journals, books, theses, dissertations, and other reliable sources, then categorising and analysing the findings to obtain a deep and thorough understanding of the topic discussed (Firman, 2018); (Suyitno, 2021). Literature research usually starts with defining a clear research question, followed by inclusion and exclusion criteria that help in filtering out the most relevant studies. Through critical and comparative analyses, this method allows researchers to identify patterns, knowledge gaps, and

theoretical and practical contributions of previous research, which in turn can provide a solid foundation for further research or practical application (Jelahut, 2022).

Results and Discussion

Risks in Global Supply Chains

Global supply chains, with their complexity and vast scale of operations, are susceptible to various types of risks that can disrupt the flow of goods, services, and information. One of the key risks is geopolitical risk, which includes political instability, war, and economic sanctions that can disrupt operations at one or more locations in the supply chain. Political instability in critical supply countries could result in major disruptions affecting the availability of raw materials or critical components. In addition, changes in international trade policies, such as tariffs and embargoes, can also increase operational costs and extend delivery times (Thomas & Helgeson, 2022).

Natural risks and natural disasters are also prominent in global supply chains. Disasters such as earthquakes, floods, and storms can cause physical damage to infrastructure, production facilities, and transport. For example, a major earthquake in Japan could have impacted the production of semiconductors that are vital to the world's electronics industry. Natural disasters not only hamper production and logistics, but can also incur significant financial losses and require considerable time for recovery (Basu, 2023).

Operational risk is the next important concern in global supply chains. It includes issues such as technology failure, human error, and process inefficiency. For example, failure of inventory management systems can lead to overstocking or understocking, which negatively impacts a company's ability to fulfil customer demand. In addition, reliance on different stakeholders in different countries can increase the likelihood of coordination and communication errors, which slows down production and distribution processes (Charlesworth, 2020).

Financial risk is also an important aspect to consider in global supply chains. Fluctuations in currency exchange rates can affect the cost of raw materials and the profit margins generated from international sales. In addition, liquidity issues and limited access to financing needed for day-to-day operations can be a significant risk for companies that rely on long and diverse global supply chains. Increased interest costs, changes in monetary policy, and uncertain global economic conditions can also affect financial stability (Kusmiati et al., 2024).

Finally, regulatory risks and government policies can also have a major impact on global supply chains. Regulations relating to the environment, occupational safety and fair trade practices often differ from country to country and require careful compliance. For example, changes in environmental regulations that set new emissions limits can force companies to make major changes in their production processes or even find new suppliers that meet these requirements (Panchal et al., 2024). Compliance with these

regulations not only requires additional resources but can also limit operational flexibility and increase production costs.

Thus, in order to manage complex global supply chains, companies must realise and mitigate the different types of risks that may arise. These risks include geopolitical risks, natural disasters, operational issues, financial risks, and government policies and regulations. With the right risk management strategy, companies can increase their supply chain's resilience to external and internal disruptions. Ultimately, effective risk mitigation not only helps maintain smooth operations but also enables companies to remain competitive in the ever-changing global marketplace.

Strategies Implemented to Mitigate Global Supply Chain Risk

One of the most effective ways to reduce risk in a global supply chain is to diversify suppliers and production locations. By having multiple suppliers spread across different geographies, companies can reduce the risks associated with dependence on a single source or location. For example, in the event of a natural disaster, geopolitical conflict, or compliance issue in one region, operations will not be completely disrupted as the company has alternatives (Shalizi, 2021).

Advanced technologies such as artificial intelligence (AI), internet of things (IoT), and big data analytics can play a huge role in mitigating supply chain risks. By utilising these technologies, companies can predict potential disruptions and take preventive action. For example, through in-depth data analytics, companies can recognise patterns and trends that may indicate potential risks before they become a major problem, allowing them to find mitigation solutions immediately (Badiru, 2021).

Implementing effective inventory management is another important strategy. Companies can implement just-in-time (JIT) approaches to reduce storage costs and minimise reliance on large inventories that are prone to damage or wastage. However, companies should also consider maintaining a certain level of safety stock for key products in order to respond quickly to unexpected disruptions (Azhgaliyeva et al., 2023).

Developing strong partnerships with suppliers and other relevant parties in the supply chain is another important strategy. By establishing good and transparent relationships, companies can increase the level of trust and collaboration. Strong partnerships allow for better communication and faster response to issues, as each party in the supply chain is willing to work together to find win-win solutions (Fischer-Daly & Raymond, 2021).

Employee training and awareness also play an important role in supply chain risk mitigation. Employees need to be trained to identify potential risks, understand emergency procedures, and use technology relevant to the supply chain. By having an aware and skilled team, companies can more quickly address emerging issues and minimise the negative impact on their operations. The implementation of regular

training programmes will ensure that employees are always ready to face challenges that may occur (Basu, 2023).

Conducting ongoing assessments and audits of the supply chain is another important strategy. By adopting a proactive approach in monitoring and evaluating the performance of suppliers and operational processes, companies can identify potential vulnerabilities early. Regular audits also help ensure that all parties in the supply chain adhere to established quality and compliance standards, and are prepared to make necessary improvements (Myerson, 2023).

Preparing contingency or emergency plans is an integral part of supply chain risk management. These plans should cover a range of potential disruption scenarios, such as natural disasters, technological failures, or geopolitical conflicts, and set out concrete measures to mitigate each of them. By having a comprehensive contingency plan in place, companies can ensure continuity of operations despite facing unexpected situations (Denton, 2024).

Using local resources whenever possible can also help mitigate supply chain risks. By relying on local suppliers and partners, companies can reduce the risks associated with long-distance transport and the uncertainty of international logistics. In addition, local resources tend to be faster in terms of response and delivery, thus maintaining smooth daily operations (Wisniewski, 2024).

Improving transparency and communication in the supply chain helps create better visibility into the entire operational process. With better access to real-time information, companies can identify and respond to issues more efficiently. Technologies such as blockchain can also be used to increase transparency and strengthen data integrity in the supply chain, ensuring information security and accuracy (Bae, 2021).

Reducing risk in global supply chains thus requires a comprehensive approach involving multiple strategies. Diversification of suppliers, utilisation of advanced technologies, effective inventory management, as well as development of strong partnerships are some of the key steps that need to be taken. In addition, employee training, continuous assessment, contingency plans, use of local resources, and increased transparency also play an important role in addressing the various challenges that can arise. By adopting these strategies, companies can improve the resilience of their supply chains and ensure operational continuity even in the face of unforeseen situations.

Conclusion

Overall, risk mitigation strategies in global supply chains play a crucial role in ensuring operational success and resilience to challenges. Through an extensive literature review, it can be concluded that supplier and resource diversification is a fundamental step in reducing dependence on a single entity, thereby minimising the risk

of supply chain disruptions. This approach allows companies to be more flexible in dealing with market fluctuations and unforeseen issues.

In addition to diversification, the utilisation of advanced technologies such as big data, Internet of Things (IoT), and blockchain has also proven effective in improving the visibility, transparency, and efficiency of the entire supply chain process. These technologies enable companies to monitor real-time operational conditions and identify potential risks more quickly. As such, decision-making can be more responsive and accurate, which is essential in controlling potential disruptions and ensuring operational continuity.

Finally, the importance of contingency plan development and continuous auditing cannot be overlooked. A well-thought-out contingency plan provides guidance for companies to act quickly and effectively in the event of a disruption. Meanwhile, continuous audits assist in periodically assessing the performance of suppliers and internal processes, enabling the identification of potential problems before they develop into a major crisis. Overall, the combination of these three strategies - diversification, technology, and proactive planning - forms a strong framework for managing risks in global supply chains.

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