

IMPLEMENTATION OF SUPPLY CHAIN MANAGEMENT IN TOFU SMALL AND MEDIUM ENTERPRISES IN SURAKARTA (CASE STUDY TAHU MBAK MAYA)

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ABSTRACT

Introduction/Main Objectives: This research aims to analyze the optimization of supply chain performance and the impact of effective supply chain management on supply optimization in Tahu Mbak Maya MSMEs in Jebres, Surakarta. **Background Problems:** Micro, Small, and Medium Enterprises (MSMEs) face challenges, including developing their capacity to compete in globalization and intense markets. One way to address this is by effectively implementing supply chain management to enhance their performance. Micro, Small, and Medium Enterprises (MSMEs) such as Tahu Mbak Maya operate in the food industry, producing tofu products. **Novelty:** The novelty contained in this research was the difference in supply chain suboptimality in tofu businesses. **Research Methods:** This study employs a qualitative descriptive research method, utilizing primary and secondary data sources. **Finding/Results:** The findings indicate that the management of the tofu supply chain in Tahu Mbak Maya MSMEs in Jebres, Surakarta, involving soybean agents, the MSME itself, and consumers, is being carried out effectively. While the supply chain management at Tahu Mbak Maya MSMEs in Jebres, Surakarta, is operating fairly well, there is room for optimization regarding transactions, policy support, financial aspects, and human resources. Sustainable tofu production considers the use of natural resources and environmental impacts. **Conclusion:** The supply chain management at UMKM Tahu Mbak Maya is already good but has yet to be optimal. Therefore, improvements are needed in several aspects to make it more optimal and capable of becoming a sustainable business.

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1. Introduction

Intensifying domestic and international business competition compels companies to improve their performance continually. According to Rudyanto et al. (2020), companies face the challenge of creating significant value-added competitive advantages. Many companies focus on supply chain management as a primary strategy to minimize overall costs to meet consumer needs (Hwihanus et al., 2022), thereby reducing losses and increasing profits (Cahyono et al., 2023). Efficiency in supply chain management allows companies to reduce losses and increase profits by integrating all parties involved, from production to product distribution. Supply chain management includes suppliers, manufacturing companies or service providers, distributors, wholesalers, or retailers who deliver products or services to end consumers (Afonso & do Rosário Cabrita, 2015; Hwihanus et al., 2022).

Micro, Small, and Medium Enterprises (MSMEs) face similar challenges in their quest to compete in the era of globalization and tight markets. The significance of effective supply chain management implementation for MSMEs is underscored by Colin et al. (2015) and Hwihanus et al. (2022). SCM not only aids in reducing logistics costs and enhancing customer service but also improves production scheduling and distribution, as outlined by (Koech & Ronoh, 2015). However, MSMEs often grapple with small operational scales and resource shortages, including labour and IT infrastructure, necessary to support efficient SCM systems (Setyaningsih & Kelle, 2021). Therefore, the adoption and adaptation of effective SCM practices are crucial steps for MSMEs to bolster their competitive positions in the market.

One MSME currently developing its capacity is UMKM Tahu Mbak Maya. UMKM Tahu Mbak Maya in Jebres, Surakarta, established in 2010, is a family business in the food industry that produces tofu from 150 kg of soybeans daily into 22 tofu moulds. Tofu itself is a food that all can enjoy. In the city of Surakarta, the average per capita tofu consumption per week was 0.19 kg (in 2021), 0.198 kg (in 2022), and 0.172 kg (in 2023) (BPS, 2024). Based on the data, it can be seen that people in Solo consume tofu every week. That indicates that tofu is still a popular side dish among the public. This tofu business still has the opportunity to become a sustainable business. In its production process, this MSME involves many parties, from soybean suppliers to employees, with raw materials processed into semi-finished products such as tofu balls, stuffed tofu, and chips. Pre-research observations indicate that over the past year, the supply chain could have been more optimal, primarily due to delayed soybean distribution and uncertainty in demand quantity, affecting operational efficiency. The purpose of this research is (a) to analyze the optimization of supply chain performance in UMKM Tahu Mbak Maya in Jebres, Surakarta, (b) to analyze the impact of optimal supply chain management on supply optimization in UMKM Tahu Mbak Maya in Jebres, Surakarta.

2. Literature Review

Implementing supply chain management (SCM) in a company has been proven to significantly impact its performance and competitive advantage (Maisaroh, 2021; Rahmasari, 2011). Despite the challenges that Micro, Small, and Medium Enterprises (MSMEs) often face in implementing SCM strategies, such as industry size, business focus, and different locations, there is a potential for significant improvement. The challenges MSMEs face in Indonesia, including inadequate management performance and capacity, lack of cooperation between departments, weak

communication, and unclear organizational goals (Centobelli et al., 2021), can be overcome with the right SCM implementation.

Research related to the basic ingredient of tofu, namely soybeans, has shown varying results regarding the performance of its supply chain. Some researchers, such as Bubun et al. (2018), Fadhlullah (2018), and Khotimah (2018), found that the performance of their supply chains was optimal. In a study by Bubun et al. (2018), it was found that the soybean supply chain in Grobogan was considered quite good due to the timely delivery of orders to customers and perfect order fulfillment, as well as optimal supply chain flexibility. Fadhlullah (2018) found that the soybean supply chain of UD Adem Ayem had three flows: product flow, financial flow, and information flow, which were efficient. Subsequent research by Khotimah (2018) also stated that the soybean commodity supply chain in tempe businesses, consisting of farmers, foreign soybeans, large soybean traders, small soybean traders, tempe entrepreneurs, and consumers, operated optimally.

However, research by Ajusa, Abidin, and Kashmir (2020) found inefficiencies in the performance of the soybean and Tempe supply chain in terms of cost and asset management. Similarly, research by Soumokil et al. (2020) found significant differences in the mas fish supply chain management in Tatelu village, especially regarding production and distribution time. Research by Soumokil et al. (2020) based on field observations concluded that the management of the mas fish supply chain in Tatelu village involved distribution flow, selling their production to wholesalers, who then sell and distribute to their partners such as wholesale traders, retailers, restaurants, and directly to consumers. There was a noticeable difference in time, where cultivation took an average of five months for one harvest and was sold to wholesalers, while wholesalers and retailers only needed a week to distribute or sell it to restaurants or consumers.

Therefore, a comprehensive understanding of SCM implementation is not just a strategic choice, but a necessity for improving performance and competitive advantage, especially for MSMEs that need to address diverse market challenges and needs. The existence of tofu businesses can contribute to sustainability, but this can only be achieved through optimal SCM and cooperation among stakeholders. This underscores the urgency and importance of our research in this area.

3. Method, Data, and Analysis

The research was qualitative and used a descriptive qualitative research method. Descriptive qualitative research used a case study approach on UMKM Tahu Mbak Maya in Jebres, Surakarta. The case study method was employed to obtain comprehensive and detailed data on the supply chain management of UMKM Tahu Mbak Maya in Jebres, Surakarta, through observations and interviews with relevant parties involved in this research. The study utilizes qualitative and quantitative research methods with primary and secondary data sources. Data collection was conducted through interview techniques, observations, and documentation. The data analysis technique used in this research was qualitative descriptive analysis to understand the mechanisms of the supply chain. This analysis provided a general overview of the soybean supply chain system at UMKM Tahu Mbak Maya in Jebres, Surakarta, and proposed the best supply chain development.

4. Result and Discussion

4.1. Result

UMKM Tahu Mbak Maya in Jebres, Surakarta, is an agro-industry that markets tofu products throughout the Surakarta and Solo-Raya regions. The target market for these tofu products includes consumers in traditional markets, vegetable stalls, eateries, catering services, and households. In developing its supply chain, UMKM Tahu Mbak Maya focuses on strengthening partnerships involving producers, distributors, retailers, consumers, and supporting institutions. The number of actors, product characteristics, distance between production locations and markets, and the roles of each actor in the supply chain influence the supply chain structure of this UMKM.

UMKM Tahu Mbak Maya in Jebres, Surakarta, is an example of an agro-industrial business that processes soybeans into tofu. This thesis highlights the importance of supply chain management (SCM) for this MSME. By implementing SCM, UMKM Tahu Mbak Maya can analyze various aspects such as supply chain, resources, production processes, and performance. A supply chain analysis is conducted to identify potential opportunities and challenges. The results of this analysis can serve as a basis for improving the supply chain, enhancing business performance, understanding consumer behavior, ensuring the availability of quality products, ensuring smooth logistics and distribution, and improving communication with supply chain actors.

The goals of the supply chain at UMKM Tahu Mbak Maya aim to assess whether the supply chain is already optimal or needs improvement, viewed from two perspectives: market targets and development. The supply chain model is designed to understand and meet consumer expectations and increase loyalty. Marketing efforts have reached the community in Surakarta and Soloraya, which has a heterogeneous consumer base without distinguishing age, occupation, or background. Tofu products can be consumed by all groups and processed into various dishes without changing their structure. The development targets of UMKM Tahu Mbak Maya include facility and technology development and supply chain strengthening. Facility and technology development is used to ensure the availability of raw materials and increase value and function. Supply chain strengthening can be done through sustainable partnerships with producers, distributors, retailers, and consumers.

The factors influencing the supply chain at UMKM Tahu Mbak Maya include the type of tofu product produced, which affects the supply chain flow; supply chain members involving business actors and stakeholders such as soybean agents, UMKM Tahu Mbak Maya, and consumers; and the system implemented to maintain the quality of the marketed products.

Supply chain management itself explains aspects of actions at the supply chain management level, including management structure, partner selection, contractual agreements, transaction systems, government support, and funding. Suppliers of UMKM Tahu Mbak Maya are soybean agents. The distributor is UMKM Tahu Mbak Maya itself, which sells the produced tofu to consumers, and the last chain is the consumers. At UMKM Tahu Mbak Maya, not all aspects of SCM are well-implemented, as the MSME focuses primarily on production while other aspects are less attended to. This is due to the soybean agents not implementing good SCM, leading to delays in raw material supply, which affects other parts of the supply chain. Partner selection in

SCM is also crucial as it can support the success of supply chain activities. UMKM Tahu Mbak Maya has partners, namely soybean agents, as raw material suppliers.

The cooperation at UMKM Tahu Mbak Maya involves agreements with agents, typically based on verbal agreements rather than documentation. An advance payment is required based on trust and verbal agreements when placing an order. Transactions between UMKM Tahu Mbak Maya and agents are agreed upon in various ways, such as direct payment to agents when delivering raw materials to the production site. The government also plays a role by supporting growth through encouragement, facilitation, regulation, and motivation. The government's role in developing UMKM Tahu Mbak Maya includes enhancing supply chain competitiveness and providing business permits. Supply chain collaboration is crucial for supply chain success, as it benefits supply chain actors in terms of performance and financial gains. UMKM Tahu Mbak Maya engages in collaborative planning with soybean agents by providing information on the raw materials needed for production. Building trust with supply chain members is also essential for UMKM Tahu Mbak Maya.

Research indicates that not all UMKM Tahu Mbak Maya activities utilize an optimal supply chain management system. Its supplier partners are soybean agents chosen directly through cooperation based on trust and commitment. Payments are made directly to the agents upon delivery of raw materials to the production location. UMKM Tahu Mbak Maya has physical resources that include production equipment and supporting facilities, such as mobile phones, motorcycles, and soybean grinding machines modified by the owner. Five employees are involved in production. The capital used in this supply chain comes from internal funds and is not reliant on bank loans.

Thus, UMKM Tahu Mbak Maya in Jebres, Surakarta, has the potential to be more efficient and effective in its supply chain through better-integrated management systems, strengthening partnerships with suppliers, and more optimally utilizing existing human and physical resources.

4.2. Discussion

The tofu industry significantly impacts the local and national economy by involving various actors from the primary to tertiary sectors. It is a source of income for the community, especially in rural areas. However, analysis of the Tahu Mbak Maya MSME supply chain in Jebres, Surakarta, shows that although its function runs well, the supply chain has yet to reach optimal levels. That is caused by more optimization in all supply chain elements, including transactions, policies, and financing, which still need to be fully synchronized. Although resource management is quite good, there is still a need for workforce sustainability and optimization of technological and human resources. In this context, improving supply chain management can be achieved through technological development, attention to employee welfare, and workforce improvement. The supply chain business process is considered good because the key to the success of Tahu Mbak Maya MSMEs lies in smooth production and marketing, supported by strong business relationships and mutual trust between supply chain members.

This research shows that Tahu Mbak Maya MSMEs still have room for improvement, especially regarding human resource management and financial, policy, and financing aspects. Based on research findings, it is proven that Tahu Mbak Maya MSMEs have not reached optimal levels. In terms of supply chain business processes, these processes are considered good.

Setyaningsih & Kelle (2021) state that simple business size and structure will make it optimal. Limited business capacity makes communication easier. Fadhlullah (2018) also have an optimal supply chain flow. Aulia et al. (2024) also stated that the supply chain's weakness is the need for more certified human resources in MSMEs. The development of increasingly sophisticated, environmentally friendly technology must also be supported by increasingly better resources.

Sustainable tofu production, an important aspect of the tofu industry, requires using natural resources and considering environmental impacts. Implementing environmentally friendly production practices, such as using organic soybeans and utilizing tofu waste as animal feed or raw materials for other industries, can significantly increase the sustainability of the tofu business. That creates a circular economy for tofu producers, reduces waste, and generates additional income. Environmental commitment and potential additional revenues from green financing can positively impact supply chain relationship management and sustainable supply chain design, fostering a sense of responsibility and commitment among stakeholders (Centobelli et al., 2021). The potential of tofu-tempeh SMEs, which can support the economy and meet the needs of all levels of society, needs to be maintained and improved by implementing green manufacturing patterns and utilizing production waste (Lesmana et al., 2024). Green manufacturing is a strategy that integrates production management and technology to create an environmentally friendly industry (Pujianto et al., 2022). This strategy can improve business and environmental performance simultaneously, as well as have an impact on the overall socio-economic activities of society (Kulsum et al., 2022). The goal of green manufacturing is sustainable manufacturing, namely making products of economic value through a production process that can save and conserve natural resources and energy, as well as reduce the negative impact on the environment as little as possible to ensure the safety of consumers and the surrounding community (Amaranti et al., 2017). The implementation of green and lean manufacturing is complementary. The synergy between green and lean manufacturing can improve performance.

Tofu production is still carried out using traditional and simple technology. That causes the efficiency level in using water and raw materials to remain low, but the level of waste production is also relatively high. Not many workers and industry know how to process waste properly. To deal with this problem, it is necessary to apply green accounting through the concept of green innovation, which is the application of green innovation to tofu factory waste. This application can be carried out by reselling the solid waste tofu dregs as animal feed or using it so that this will positively impact the factory in the form of additional income, and the impact on the surrounding environment will not experience pollution. Meanwhile, liquid waste from the tofu factory is left in a holding area to flow into the river (Putri et al., 2022).

5. Conclusion and Suggestion

The findings indicate that the management of the tofu supply chain in Tahu Mbak Maya MSMEs in Jebres, Surakarta, involving soybean agents, the MSME itself, and consumers, is being carried out effectively. While the supply chain management at Tahu Mbak Maya MSMEs in Jebres, Surakarta, is operating fairly well, there is room for optimization regarding transactions, policy support, financial aspects, and human resources. Sustainable tofu production considers the use of natural resources and environmental impacts. The utilization of organic soybeans, tofu waste as

animal feed or raw material for other industries, and implementing environmentally friendly production practices can enhance the sustainability of tofu businesses.

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