APPLICATION OF PROJECT-BASED LEARNING IN IMPROVING UNDERSTANDING OF LOGISTICS MANAGEMENT IN SIKECE PURWAKARTA MACARONI MSMES

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Abstract. *This study aims to analyze the implementation of logistics management practices in Makaroni SiKece, a micro, small, and medium enterprise (MSME) located in Purwakarta Regency. After the COVID-19 pandemic, the enterprise experienced a decline in production and distribution capacity due to inefficient logistics management, including raw material procurement, storage, inventory recording, and product delivery. Most logistics activities were still carried out manually and centralized by the business owner, which caused delays in distribution and limited market expansion. This research employed a qualitative descriptive approach to explore existing logistics practices and identify improvement opportunities. Data were collected through observation, interviews with the business owner, and documentation of operational activities. The analysis focused on key logistics components such as inventory management, distribution route planning, packaging standardization, and the use of simple digital tools for stock recording and distribution mapping. The findings reveal that limited knowledge of logistics management and the absence of structured procedures significantly affect operational efficiency. However, the adoption of basic logistics management concepts and simple digital tools can support better inventory control and distribution planning. The study concludes that improving logistics management practices is essential to enhance operational efficiency and strengthen the competitiveness of MSMEs in local markets.*

Key words: Logistics Management, MSMEs, Distribution Efficiency

Introduction

Micro, Small, and Medium Enterprises (MSMEs) are economic sectors that play a significant role in supporting national economic growth. MSMEs have a great contribution to labor absorption, income equity, and strengthening the locally-based economy.

Data from the Ministry of Cooperatives and SMEs shows that there are more than 64 million MSME units in Indonesia that absorb more than 97% of the national workforce and contribute more than 60% to the Gross Domestic Product (GDP). However, behind these contributions, MSMEs still face various challenges in managerial aspects, especially in the management of logistics systems and product distribution.

Logistics management plays an important role in maintaining a smooth supply chain, starting from raw material procurement, storage, stock arrangement, packaging, to product delivery to end consumers. However, many MSME actors still manage these activities simply and manually due to limited knowledge, human resources, and the availability of supporting facilities. This causes the distribution process to be inefficient, delivery times are irregular, and market reach is limited. Below is the macro kriuk customer data in table 1.

Table 1. Macaroni Kriuk Customer Data for the June 2021 Period

Brand Name	Number of Customers
Toko Sikece	1.732
Chiyo Nata	11.106
Zadut	1.198

Sumber: Fachmy et al. (2021)

The data in Table 1 shows that the number of customers of Toko Sikece macaroni kriuk products in June 2021 was much lower than its main competitors. Sikece Shop only recorded 1,732 customers, while Chiyo Nata reached 11,106 customers and Zadut 1,198 customers. This comparison confirms the market position of Toko Sikece which is still weak in the competition for the macaroni kriuk category. These findings also form the basis for calculating the *penetration share* which only reaches around 12%, as identified in the study by Fachmy et al. (2021), thus demonstrating the need for marketing and distribution improvement strategies.

In addition to challenges in the production aspect, SiKece Macaroni MSMEs also face low market penetration. Previous research by Fachmy et al. (2021) showed that the *penetration share* of Macaroni SiKece only reached around 12%, which is still lower compared to competitors who have a wider market reach. This problem is exacerbated by the lack of a structured logistics system, where the entire production process, stock recording, distribution, and promotion are still centralized to business owners without a clear division of operational functions. This condition shows that logistics management is an important factor that affects operational efficiency and the ability of businesses to expand the market.

Therefore, this study seeks to analyze logistics management practices in SiKece's Macaroni MSMEs, especially related to inventory management, distribution planning, packaging standardization, and the use of simple technology in recording and mapping distribution. The results of this study are expected to provide an overview of a more structured logistics management model so that it can improve distribution efficiency, expand market reach, and strengthen the competitiveness of local products in Purwakarta Regency.

Reseach Methods

This study employed a Project-Based Learning (PBL) approach to examine and improve logistics management practices in the MSME Makaroni SiKece located in Purwakarta Regency. The PBL approach was selected because it allows researchers and students to engage directly with real operational problems faced by small businesses, particularly those related to logistics and distribution management. Through this approach, learning and research activities are integrated with practical problem-solving processes that produce applicable solutions for the partner enterprise.

The research was conducted over five weeks and involved a series of structured activities beginning with coordination between the research team and the owner of Makaroni SiKece. Prior to the implementation of the research activities, an official permission letter was submitted to the business owner to ensure that all observation, mentoring, and analysis activities could be carried out systematically and ethically. The involvement of the business owner and family members participating in the production process was essential in providing firsthand information regarding daily operational practices.

The study applied a qualitative descriptive method to explore existing logistics

practices within the enterprise. Data were collected through direct observation, semi-structured interviews, and documentation of production and distribution activities. Observations were conducted to understand the workflow of raw material procurement, production processes, inventory storage, and product distribution. Interviews were carried out with the business owner and individuals involved in operational activities to identify challenges related to inventory recording, distribution planning, and production scheduling. Supporting documentation, such as stock records, packaging processes, and distribution routes, was also analyzed to provide a comprehensive understanding of the existing logistics system.

The research activities were implemented through several stages following the principles of Project-Based Learning. The first stage involved identifying logistics-related problems faced by the enterprise. At this stage, participants were introduced to the basic concepts of logistics management and the importance of integrating production, storage, and distribution activities. A mapping of the existing logistics workflow was conducted to identify inefficiencies and operational constraints.

The second stage focused on training and analysis related to inventory management and stock recording. The research team introduced a simple inventory recording system using structured tables to monitor raw materials and finished products. In addition, the concept of reorder points and basic purchasing schedules for raw materials was discussed to support more systematic procurement planning.

The third stage involved the analysis and improvement of packaging standardization and product handling procedures. This stage examined the types of packaging materials used and the consistency of packaging practices to reduce potential product damage during storage and distribution.

The fourth stage addressed distribution planning and market area mapping. The research team utilized digital tools, including Google Maps, to analyze potential distribution routes and identify reseller clusters based on geographical proximity. This step aimed to improve delivery efficiency and reduce transportation costs.

Finally, the fifth stage involved the development and finalization of a draft Standard Operating Procedure (SOP) for logistics management. The SOP was designed to provide a structured operational guideline for inventory management, packaging procedures, production scheduling, and distribution planning within the enterprise.

Through these stages, the study was able to analyze the existing logistics system while simultaneously proposing practical improvements that could enhance operational efficiency and distribution performance within the MSME.

Research result

1. Product Innovation and Quality Improvement

The findings indicate that the MSME Cemilan SiKece has implemented several product innovations to maintain its competitiveness in the local snack market. One of the main innovations involves the diversification of product flavors and improvements in the quality of raw materials used in the production process. Product diversification was carried out by introducing several flavor variants across different snack categories, including makaroni bantat, makaroni kriuk, basreng, and kerang remis. Each product category offers specific flavor variations designed to accommodate consumer preferences, such as original, spicy, corn flavor, balado, and spicy lime leaf.

Product innovation also includes improvements in raw material selection and production consistency. The enterprise began implementing more consistent seasoning composition and standardized production steps to ensure that each product batch maintains a similar taste profile. Maintaining consistent flavor quality is crucial for strengthening brand identity and building customer trust. In addition, the enterprise introduced simple packaging improvements to enhance product durability and presentation.

The product portfolio offered by the enterprise includes several pricing schemes to accommodate different market segments. Products are sold individually at IDR 2,000 per piece, in medium packages containing five pieces at IDR 8,500 per pack, and in larger distribution packages containing 50 pieces priced at IDR 80,000 per bale. This tiered pricing strategy enables the enterprise to target both end consumers and small resellers who distribute products to nearby retail outlets.

Overall, product innovation and quality improvement have contributed to strengthening the competitive position of the enterprise in the local market. The diversification of flavors and improved packaging have increased product attractiveness, while consistent raw material selection has supported better product quality control.

2. Digitalization of Marketing and Distribution

Another significant finding of this study relates to the adoption of digital technology in marketing and distribution activities. The enterprise began utilizing social media platforms and digital marketplaces to promote products and reach a broader customer base. Online promotion activities include the use of product photos, short promotional videos, and customer interaction through digital messaging platforms.

The integration of digital marketing channels has enabled the enterprise to expand its market reach beyond traditional offline distribution networks. Previously, most sales relied on direct purchases and limited reseller networks within nearby neighborhoods. Through digital platforms, the enterprise can now receive orders from customers located in different districts and cities.

Digitalization also contributes to more efficient communication with customers. Online messaging services allow the business owner to respond quickly to customer inquiries, process orders, and coordinate deliveries. In addition, the use of digital platforms facilitates the creation of product catalogs that clearly display available variants, prices, and promotional offers.

In terms of distribution, the enterprise has begun organizing reseller networks based on geographic areas to simplify product delivery. This approach helps reduce transportation costs and improves delivery efficiency. Although the digital system used remains relatively simple, it provides a practical solution for small enterprises that have limited technological resources.

3.Adaptation to Market Changes

The results also show that the enterprise demonstrates a relatively high level of adaptability in responding to market changes. The COVID-19 pandemic created significant challenges for many small businesses, including reduced consumer purchasing power and disrupted distribution channels. In response to these challenges, the owner of Cemilan SiKece implemented several strategic adjustments to maintain business continuity.

One important adaptation strategy involved strengthening the product brand and maintaining consistent product quality. The enterprise also adjusted packaging designs to make them more attractive and suitable for online sales. Improved packaging not only enhances product appearance but also helps protect the products during delivery.

Another adaptation strategy involved expanding the distribution network by collaborating with local resellers and utilizing digital marketing platforms. This approach allowed the enterprise to reach a wider consumer base despite physical mobility restrictions during the pandemic period.

Furthermore, the enterprise demonstrated flexibility in managing production volumes according to market demand. Production schedules were adjusted to avoid excess inventory while still ensuring sufficient supply for reseller orders. This operational flexibility helped the enterprise maintain financial stability and continue operating despite market uncertainty.

Overall, the findings indicate that the ability to innovate, adopt digital tools, and adapt to changing market conditions plays a critical role in supporting the sustainability of small enterprises such as Cemilan SiKece.

Disscusions

The development of the Cemilan SiKece enterprise reflects the dynamic nature of micro-scale businesses in responding to changing business environments. The introduction of product innovations through flavor diversification and improved production consistency demonstrates the importance of creativity in maintaining competitiveness in the snack

industry. Product innovation not only enhances product attractiveness but also contributes to long-term brand differentiation.

Digital transformation also plays a crucial role in supporting the growth of the enterprise. The adoption of social media and digital marketplaces has enabled the business to overcome traditional market limitations and expand its customer reach. Digital marketing provides a cost-effective promotional channel that allows small businesses to interact directly with customers while maintaining operational efficiency.

Another important aspect identified in this study is the enterprise's ability to adapt to market changes. The pandemic period required many MSMEs to adjust their operational strategies to survive. The flexibility demonstrated by Cemilan SiKece in adjusting production schedules, improving packaging, and strengthening distribution networks illustrates the importance of managerial agility in small business operations.

These findings support previous studies indicating that innovation, digital adoption, and adaptive management practices are key factors influencing MSME sustainability. The case of Cemilan SiKece highlights how even small enterprises with limited resources can improve their competitiveness through incremental innovation and strategic use of digital technology.

The list of products and prices is presented in Table 1 below:

Jenis Produk	Varian Rasa	Rp.2000/Pcs	Rp.8500/Pak (Isi 5 Pcs)	Rp.80000/Bal (Isi 50 Pcs)
Makaroni Bantat	Ori, Pedas	✓	✓	✓
Makaroni Kriuk	Jagung, Balado, Pedas Daun Jeruk	✓	✓	✓
Basreng	Ori, Pedas	✓	✓	✓
Kerang Remis	Pedas	✓	✓	✓

Source: Project Based Learning (2025)

The development of the MSME Keluarga Cemilan SiKece reflects the dynamic nature of micro-scale enterprises in responding to changes in the modern business environment. Initially, the business operated using traditional methods with limited market reach and simple production processes. However, over time the enterprise demonstrated the ability to adapt through product innovation and improvements in product quality. These efforts include diversifying product flavors, maintaining consistency in taste, and improving the selection of raw materials used in production. Such initiatives are essential for maintaining competitiveness in the increasingly competitive snack industry. This finding is consistent with the study of Supriyanto et al. (2021), which emphasizes that creativity and product diversification are key factors in sustaining the competitiveness of MSMEs. Product innovation not only enhances product quality but also serves as a foundation for building sustainable competitive advantage.

In addition to product innovation, digital transformation has become an important milestone in the development of Keluarga Cemilan SiKece. The use of social media platforms, digital product catalogs, and content-based marketing strategies has provided several benefits, including more effective promotion, reduced marketing costs, and broader market access. According to Handayani et al. (2022), digitalization can accelerate transaction processes, improve customer service, and strengthen the connection between MSMEs and their target markets. As consumer behavior increasingly shifts toward digital platforms, the adoption of digital marketing strategies has become not only relevant but also essential for business sustainability.

Furthermore, the adaptability of the business owner has played a crucial role in maintaining operations during periods of uncertainty, particularly during the COVID-19 pandemic and shifts in consumer behavior. The enterprise demonstrated flexibility by adjusting production strategies, introducing packaging variations, and reorganizing distribution routes to improve operational efficiency. This agility reflects the importance of managerial resilience in small business management. As highlighted by Rahman and Nugroho (2023), managerial flexibility and the ability to adapt to market dynamics are critical determinants of MSME sustainability in today's fast-changing business landscape.

This discussion becomes even more relevant when linked to the findings of Fachmy et al. (2021), which reported that the market penetration of SiKece products was only around 12%, largely due to limited distribution systems and weak market expansion strategies. These findings highlight the importance of improving distribution management, optimizing social media marketing, and strengthening promotional strategies to expand market reach. Overall, the experience of Keluarga Cemilan SiKece demonstrates that local MSMEs can survive and grow through the synergy of product innovation, digital technology adoption, and adaptive business strategies.

Conclusions

This study demonstrates that improving logistics management plays an important role in enhancing the operational efficiency of MSMEs. Prior to the implementation of the logistics management approach, Makaroni SiKece faced several operational challenges, including manual stock recording, unstructured distribution processes, and the absence of standardized operational procedures. These limitations contributed to inefficiencies in production planning and product distribution.

The findings of this research indicate that the introduction of a more structured logistics management system significantly improved the enterprise's ability to manage its operational activities. The implementation of standardized inventory recording formats enabled the business owner to monitor stock levels more accurately and systematically. In addition, the development of clearer logistics workflows—from production scheduling and packaging processes to product delivery—helped create a more organized and efficient operational structure.

Another important outcome of the study was the establishment of a logistics Standard Operating Procedure (SOP). The presence of a written operational guideline provides a consistent reference for daily activities, reduces operational errors, and improves coordination among individuals involved in the production and distribution process. The implementation of this SOP also contributes to more efficient distribution management and faster response to customer demand.

Overall, the results suggest that strengthening logistics management practices can significantly support the sustainability and competitiveness of MSMEs. By adopting structured inventory management, organized distribution planning, and standardized operational procedures, small enterprises such as Makaroni SiKece can improve efficiency, enhance product delivery performance, and expand their market reach. These findings highlight the importance of practical logistics management strategies in supporting the long-term development of MSMEs in local economic sectors.

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