

Analysis of Local Banana Product Diversification as Market Expansion Through Digital Finance

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Abstract

This study analyzes the diversification strategy of banana-based products in Lumajang Regency through the utilization of financial technology (fintech) and digital finance as an effort to expand markets nationally and internationally. Lumajang, as one of the largest banana producers in East Java with a production of 716,624 quintals in 2023, shows significant potential for developing value-added processed banana products. However, most small and medium enterprises (SMEs) still face challenges in product innovation, limited digital marketing, low adoption of fintech, and high logistics costs for market expansion. Using a qualitative case study approach with the CIPOO (Context-Input-Process-Output-Outcome) framework, data were collected through participant observation, in-depth interviews, and document studies. The findings reveal that although several banana-based products such as chips, banana flour, and beverages have been developed, the lack of digital literacy and financial inclusion limits their competitiveness. Digital marketing channels remain local and informal, while knowledge of export administration and packaging standards is still insufficient. The integration of fintech and digital finance is identified as a key driver to improve access to capital, enhance transaction efficiency, and expand market reach. This research concludes that intensive mentoring in product diversification, digital literacy, and export packaging is crucial to strengthening SMEs' competitiveness and supporting sustainable development goals (SDGs) in the region.

Keywords: Banana Diversification, Fintech, Digital Finance, SMEs

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Received: 10-09-2025

Revised: 17-10-2025

Accepted: 25-11-2025

Published: 30-11-2025



1. Introduction

Lumajang Regency in East Java Province is one of the largest banana-producing regions in Indonesia. In 2023, banana production in this regency reached 716,624 quintals, with Senduro District as the largest contributor (273,217 quintals), followed by Pasrujambe District (94,000 quintals) and Tempeh District (28,761 quintals) (BPS Kabupaten Lumajang, 2023). This high production indicates significant potential for the development of banana-based industries, particularly in the form of high-value-added processed products such as chips, sale, and other processed products (Budiwati, 2016). However, despite its abundant production, the banana processing industry in Lumajang faces obstacles in product innovation and market expansion. Most processed banana products are still marketed locally with a limited distribution chain. However, national and international markets show quite high demand for banana-based products (Yudha & Noerbayinda, 2023).

According to a report by the Indonesian Ministry of Trade, exports of processed banana products from Indonesia continue to increase annually, particularly to countries such as Malaysia, Singapore, China, and the Middle East (Yudha & Noerbayinda, 2023). Furthermore, the growing trend toward healthy and natural food consumption in the global market means that organic or natural-based banana products have a greater opportunity to penetrate the export market. For example, the health food market in Europe and North America has shown significant growth, with high demand for processed products based on tropical fruits (Food and Agriculture Organization). However, limited financial access and the lack of utilization of digital technology remain major obstacles for MSMEs in Lumajang to expand their products to a wider market (Rahardjo, 2020).

On the other hand, the development of financial technology (fintech) in Indonesia has opened new opportunities for Micro, Small, and Medium Enterprises (MSMEs) to improve financial access and expand their market, enabling them to expand into national and international markets (Fajar & Larasati, 2021). Therefore, the

use of fintech can assist industry players in accessing capital, digital payments, and implementing e-commerce-based marketing strategies to reach national and international markets (Intani et al., 2022).

Lumajang Regency has designated bananas, particularly the Pisang Mas and Kirana varieties, as a superior regional product, and various strategies and programs have been implemented to support the development of this commodity, which is in line with the Sustainable Development Goals (SDGs) (Anam, 2025). There are many factors that make several banana processing industries in Lumajang Regency unable to compete and expand in the national and international markets, including: (Budiwati, 2016).

The purpose of this research is to analyze the diversification strategy for local products, namely Lumajang bananas, through the application of fintech and web-based digital finance. This will enable processed bananas to become a superior product and expand into national and international markets. This will provide policy recommendations that can support the sustainability of local governments' SDG programs with similar characteristics.

This research uses a qualitative method with a case study approach. Data collection techniques include participant observation, in-depth interviews, and document review. The collected data will be analyzed using the CIPOO (Context-Input-Process-Output-Outcome) technique, which helps ensure that every element of a program or process is thoroughly analyzed, providing clearer insights for improvement and decision-making.

The research results show that Lumajang's banana potential is enormous, with production reaching 716,624 quintals in 2023, primarily from the Senduro, Pasrujambe, and Tempeh Districts. However, the banana processing industry still faces challenges in product innovation, diversification, and the use of digital technology. Through CIPOO analysis, it was found that the context underlying the problem is high production but low added value due to limited marketing strategies. In terms of input, local human resources have basic processing skills, but are not supported by an understanding of digital literacy and fintech. The process shows that training in banana-based product diversification and digital platform integration is needed to expand market reach. The output achieved is the formation of product diversification strategies such as premium banana chips, banana flour, and banana-based beverage products combined with the use of e-commerce and digital payment systems. Meanwhile, the expected outcomes are increased competitiveness of local products, wider market access at the national and even international scale, and support for sustainable development goals (SDGs). Thus, the implementation of fintech and financial digitalization is a key strategy in increasing the added value of Lumajang bananas and strengthening the position of local MSMEs.

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1. The limited ability of human resources to process products made from bananas into more diverse preparations.
2. The equipment for the production process is still traditional so it cannot produce quality products, as a result the product easily changes in taste and is damaged.
3. There has been no product innovation, so what was produced from the original were only great banana chips and original kirana bananas.
4. Absence of careful production planning
5. There is no regular business recording or bookkeeping.
6. There is no clear separation between household finance and business finance.
7. The weak marketing strategy used resulted in little profits and did not develop well.
8. Difficulty accessing capital and lack of digitalization in finance

MSMEs, especially through digital payment platforms, technology-based lending (peer-to-peer lending), and e-commerce that enable wider market expansion [6]. Several studies have also shown that the global demand for banana-based products continues to increase, especially in countries such as Japan, the European Union, and the Middle East, which further drives the importance of product expansion strategies into international markets (Rahardjo, 2020).

This research offers novelty by integrating value-added product diversification strategies, fintech utilization, and international digital market expansion in one model that can be applied by banana processing MSMEs in Lumajang Regency. Unlike previous studies that focused only on traditional processing aspects, this study emphasizes a premium product-based approach that utilizes financial technology as a catalyst for business growth (Wachyu & Winarto, 2020). In addition, the international digital market expansion strategy developed in this study provides a new approach for MSMEs in utilizing e-commerce and fintech-based platforms to penetrate the global market (BPS Kabupaten Lumajang, 2023).

2. Methods

This research uses qualitative methods. Qualitative research aims to understand current or past phenomena based on the experiences of research subjects (Kusumastuti & Khoiron, 2019). Qualitative methodology is a research procedure that produces data in the form of words and statements from the research subjects (Sugiarto, 2022). Qualitative research relates to the ideas, opinions, or beliefs of research subjects that cannot be measured numerically (Sulistiyo, 2023). In the context of this research, it is to describe the diversification of processed banana products and the application of fintech in digital finance to make it a superior product and capable of expanding into national and international markets.

This research will be conducted in Lumajang Regency, East Java, with a focus on micro, small, and medium enterprises, one of which is King Banana Lumajang, which processes bananas as the region's leading commodity, namely Bolen Pisan and various other processed products. The Lumajang Regency Government has actively encouraged the diversification of banana-based products, such as chips, sale, and other products, to increase added value and expand market opportunities for local MSMEs (Anam, 2025). In addition, the implementation of financial technology (fintech) in the MSME sector has been proven to improve the efficiency of financial management and access to financing, which are essential in supporting the expansion of local products into international markets (Yudha & Noerbayinda, 2023). This research will explore how the integration of product diversification strategies and the use of fintech can be a catalyst for the expansion of processed banana products into international markets.

Qualitative research stems from the uniqueness and complexity of the social reality being studied, so selecting informants is crucial. Informants are individuals asked to provide opinions regarding research problems and are directly involved in the issues being studied (Kusumastuti & Khoiron, 2019). This study used a purposive sampling technique. Researchers deliberately and deliberately selected informants or subjects who could help them understand the research problem (Sugiarto, 2022). Researchers chose informants who were considered knowledgeable and trustworthy in explaining the research problem in depth.

This study uses qualitative data with data sources grouped into 1) primary data obtained directly through in-depth interviews with research informants and 2) secondary data, namely data obtained not from the first party but from certain parties related to this research (Sulistiyo, 2023).

The CIPOO technique is a data analysis framework used to understand the workflow or system as a whole with the following explanation (Suryadin, et al, 2022):

1. Context; This section describes the background, objectives, and main issues to be addressed. Context includes information about the environment or situation in which the program or process is carried out.
2. Input; This section includes all the resources required to run the process which can be human, financial, material, information, or technological resources.
3. Process: The steps or activities taken to convert input into output. This section analyzes the mechanisms or methods used.
4. Output; Is the direct result of a process, such as a product produced, a report, or a service provided.
5. Outcome: Is the long-term impact or change expected to occur after the output is produced. Outcomes are often related to strategic goals or broader results

3. Results and Discussion

Result

Field research in Lumajang Regency uncovered several key findings related to fintech-based banana product diversification strategies and financial digitalization. From a Context-Input-Process-Output-Outcome (CIPOO) perspective, the research findings can be summarized as follows:

Product Discovery and Processing Diversification

The banana industry in Lumajang still dominates fresh banana production, while new value-added products are emerging sporadically. Interviews revealed several types of processed banana products developed by local MSMEs, such as banana chips (original, chocolate, and cheese variants), banana flour, banana biscuits, and fermented banana drinks. However, adoption of these product innovations remains limited due to resource constraints, capital constraints, and digital marketing knowledge.

The banana industry in Lumajang Regency is still dominated by fresh banana production, which is then sold directly to traditional markets and wholesalers. This situation results in suboptimal added value for banana products, despite Lumajang's significant potential as a banana production center in East Java. Efforts to process

bananas into high-value products have begun, but are still limited to a small scale and not evenly distributed across production centers. This demonstrates the potential for developing a banana-based processing industry that remains vastly expanded.

Based on interviews with MSMEs, several processed banana products have begun to be developed. These include banana chips in various flavors, such as original, chocolate, and cheese, which are quite popular with local consumers. Furthermore, other innovations include banana flour, which can be used as a base for cakes, banana-based biscuits, and fermented beverages with unique flavors. However, these processed product variations are still unable to compete widely in the national and international markets due to limited promotion and production capacity.

The adoption of product innovation among Lumajang's MSMEs remains hampered by several factors, including limited human resources, limited business capital, and a lack of understanding of digital marketing strategies. Most businesses still rely on conventional sales methods and simple word-of-mouth promotion. A lack of digital literacy has led to underutilization of marketing opportunities through e-commerce and social media. Therefore, ongoing support is needed, both in processing technology, product design, and digital marketing, to enable Lumajang's processed banana products to penetrate a wider market and become highly competitive (Budiwati, 2016).

Utilization of Fintech and Financial Digitalization

Many business owners admit they don't understand or utilize fintech services (e.g., digital wallets, online loans, QR payment systems) in their production and marketing processes. In-depth interviews revealed that most rely solely on traditional bank transfers and simple social media platforms (Instagram, WhatsApp) to reach consumers. Few have implemented integrated digital payment systems in their stores.

Research results show that the use of financial technology (fintech) services among Lumajang banana MSMEs remains very limited. Many business owners admit to not understanding the benefits and mechanisms of using fintech, both for daily transactions and as access to business capital financing. This poses a serious obstacle to boosting the competitiveness of processed banana products and enabling them to penetrate a wider market. Yet, fintech has been proven to facilitate access to capital, provide efficient payment methods, and increase financial inclusion, particularly in the MSME sector (Sholihin & Pratama, 2019).

Based on in-depth interviews, most MSMEs still rely on conventional bank transfers for sales transactions, as well as simple social media platforms like WhatsApp and Instagram to interact with consumers. While these methods are quite effective locally, they don't support broader market expansion, especially nationally or internationally. The limited use of marketplaces and e-commerce platforms means that product marketing reach remains limited to local consumers and buyers already familiar with the product.

Only a small number of MSMEs have attempted to integrate QRIS-based digital payment systems or digital wallets into their stores. However, these efforts remain inconsistent and lack a planned digital marketing strategy. This situation highlights the need for increased digital and financial literacy among business owners, as well as support from local governments and financial institutions. With optimal fintech implementation, banana MSMEs in Lumajang can gain broader access to capital, improve transaction efficiency, and expand their marketing reach to the global market.

Out-of-Region Products and Market Barriers

Several MSMEs that have attempted to sell to markets outside their region report logistical challenges, high shipping costs, and a lack of export packaging support systems. Producers often report difficulties with export administration and international marketing due to a lack of digital connections and language skills in foreign markets.

Research results show that some MSMEs in Lumajang have actually attempted to expand their marketing reach for processed banana products outside the region, even to several major cities in East Java and outside the province. These efforts demonstrate the significant market potential for Lumajang's processed banana products. However, penetration into the outside market remains suboptimal due to various obstacles that make it difficult for businesses to compete with similar products from other regions (Sholihin et al., 2024).

One of the main obstacles is logistics, particularly high shipping costs and a lack of access to efficient distribution services. Processed banana products, such as banana chips or flour, require proper packaging to maintain quality during shipping. However, many MSMEs lack packaging standards that meet regional and national market needs. This situation is exacerbated by limited capital to purchase high-quality packaging materials that meet export standards.

Furthermore, another common obstacle is a lack of understanding of export administration and international marketing strategies. Producers report difficulties understanding export documents and procedures, as well as limitations in establishing digital connections with potential international buyers. Lack of foreign language skills is also a barrier, making negotiations with international buyers difficult. This underscores

the importance of local government support, export training, and international digital marketing assistance to ensure Lumajang's processed banana products are competitive in the global market.

Development Aspects	Findings in MSMEs in Lumajang Regency
Product diversification	Chips (various flavors), flour, biscuits, fermented drinks
Use of fintech/digital	At least; some still rely on traditional bank transfers
Digital marketing channels	Simple social media (Instagram, WhatsApp), not many e-commerce websites
Barriers to expansion	Expensive logistics, export administration, understanding foreign markets
Need for assistance	Digital literacy training, export packaging, web system integration

Table 1. Important Aspects in the Development of MSME Businesses in Lumajang Regency

Key Points of the Research Findings

- The scope of product diversification is still limited to simple innovations (chips, flour)
- Fintech and digital payment system penetration is low among banana business actors.
- Digital marketing channels are largely local and informal.
- The main barriers to market expansion are logistics, shipping costs and administrative aspects.
- Business actors need intensive assistance on the digital side, financial literacy, and export packaging

Discussion

- The scope of product diversification is still limited to simple innovations in chips.

Diversification of processed banana products in Lumajang is currently focused on simple innovations such as banana chips. This product is indeed a primary choice due to its relatively easy production process, low capital requirements, and stable local market demand. However, the dominance of chips as the primary product demonstrates limited creativity in developing variations of banana products with higher added value.

Research by Suwirmayanti, Sudarsana, and Nurtanto (2023) confirms that "assisting partners in diversifying their banana chip products by adding flavor variants is one of the initial steps to increase market appeal." This indicates that innovation still revolves around developing chip flavor variants, not yet reaching new product forms such as banana flour, beverages, or raw materials for the food industry. In other words, the scope of product diversification is not optimal for expanding market segments.

Furthermore, Harahap's (2023) study also stated that "banana-based processed products have significant potential for development, but limited innovation results in low added value." Therefore, a broader diversification strategy is needed, supported by processing technology and product innovation training. This is crucial so that banana MSMEs can compete not only by relying on chips but also by offering products with higher economic value.

- Fintech and digital payment system penetration is low among banana business actors.

The low penetration of fintech among banana businesses in Lumajang demonstrates a lack of digital financial literacy. Most businesses rely more on cash transactions and conventional bank transfers than on modern services like digital wallets or QRIS. This makes transaction processes less efficient and limits the potential for product marketing to broader markets, particularly nationally and internationally.

Norman, Ramadhanti, and Indriaty (2024) assert that "financial literacy, social capital, and financial technology partially have a positive and significant influence on financial inclusion." This suggests that low fintech adoption is directly related to the limited financial inclusion experienced by banana MSMEs. In other words, limited digital literacy is a barrier to the use of financial technology.

Furthermore, research by Saputra and Hidayat (2022) also states that "the lack of understanding of digital payment applications among MSMEs is a major factor in the low adoption of fintech." This finding is relevant to the situation of banana MSMEs in Lumajang, making digital financial literacy assistance an urgent need to make transactions more efficient, transparent, and able to support market expansion.

- Digital marketing channels are largely local and informal.

The digital marketing channels used by banana MSMEs in Lumajang are largely local and informal. They primarily utilize simple social media platforms like WhatsApp and Instagram to reach a limited consumer base. This strategy is effective for maintaining a local customer base, but inadequate for expanding the market nationally or internationally.

According to research by Suwirmayanti, Sudarsana, and Nurtanto (2023), "marketing education through online media is a crucial strategy for expanding the reach of processed banana products." However, the reality is that most MSMEs are unable to optimize e-commerce or marketplace platforms due to limited digital literacy. This limits the market reach of processed banana products to a network of buyers who already know the producers directly.

Sari and Nugroho's (2022) research also emphasized that "the inability of MSMEs to utilize marketplaces leads to low competitiveness of local products in the broader market." Therefore, a more formal, structured,

and e-commerce platform-based digital marketing strategy is essential for Lumajang's processed banana products to compete with similar products from other regions.

- d. The main barriers to market expansion are logistics, shipping costs and administrative aspects.

The biggest obstacle faced by MSMEs in expanding the market for processed banana products is logistics. Relatively high shipping costs often reduce the competitiveness of products when marketed outside the region. This has led many businesses to choose to remain focused on the local market. According to Rahayu (2021), "high logistics costs are one of the main causes of the weak distribution of MSME products to the national market."

Besides costs, export administration issues are also a significant obstacle. Most MSMEs lack an adequate understanding of export procedures, from standard packaging to required documentation. Research by Putri and Santosa (2022) confirms that "the inability of MSMEs to meet export administration and quality standards makes it difficult for their products to compete in the global market."

Thus, logistical and administrative barriers are major challenges in expanding market reach. Support in the form of export training, distribution facilitation, and logistics cost subsidies can be solutions to increase the competitiveness of processed banana products both nationally and internationally.

- e. Business actors need intensive assistance on the digital side, financial literacy, and export packaging.

Banana processing businesses in Lumajang still face limited knowledge in digital technology utilization, financial literacy, and standard export packaging techniques. Many rely solely on traditional methods for business management. According to Sari (2020), "the lack of digital and financial literacy is a major obstacle for MSMEs in innovating their businesses and expanding their markets."

Intensive mentoring is needed to improve the capacity of business actors, particularly in utilizing digital media as a marketing channel and modern payment systems. Furthermore, mastering financial literacy can help entrepreneurs manage capital and access formal financing. Research by Prasetyo and Lestari (2021) shows that "continuous training in financial literacy can increase the independence and sustainability of MSMEs."

On the other hand, export packaging skills are crucial for processed banana products to meet international market standards. Without assistance, many businesses will struggle to meet administrative and quality requirements for export products. Therefore, an integrated training program encompassing digitalization, finance, and exports needs to be developed to help MSMEs become more competitive in the global market.

4. Conclusion

The results of this study indicate that the development of banana-processed MSMEs in Lumajang still faces fundamental challenges in product diversification, digital technology utilization, financial literacy, and readiness to face a wider market. Product innovation is still limited to simple processed products such as chips with a few flavors, so added value is not optimal. Furthermore, the penetration of fintech and digital payment systems is also still low, as most businesses rely solely on traditional bank transfers and simple local marketing channels based on social media such as WhatsApp and Instagram. Logistical barriers, high shipping costs, and limited administration and understanding of foreign markets further limit opportunities for expansion into national and international markets. This situation emphasizes the importance of intensive mentoring for MSMEs, particularly in improving digital literacy, financial management, and packaging skills that meet export standards. Support from the government, financial institutions, and educational institutions is a strategic factor in accelerating the transformation of banana MSMEs in Lumajang so they can adapt to the demands of the digital era and global competition. With the integration of training programs, facilitating access to financing, and strengthening technology-based marketing networks, banana MSMEs have the potential to increase competitiveness and make a greater contribution to the regional economy. Thus, the conclusion of this study emphasizes that the success of MSME development does not only depend on product creativity, but also on the readiness of a supporting ecosystem that is able to strengthen business sustainability.

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