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# Development of a Strategy for Business Improvement in the Cilembu Sweet Potato Chip Processing Industry (Case Study of the Small and Medium Enterprise "Ma Utik" in Cilembu Village, Pamulihan District, Sumedang Regency, West Java)

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ABSTRACT

*The SME "Ma Utik" is a household industry in Cilembu Village, Sumedang Regency, West Java, specializing in processing Cilembu cassava into chips. Despite its market potential, the SME faces challenges including limited production capacity, informal supplier partnerships, and ineffective marketing. This study aims to formulate strategies for the issue discussed by identifying supply chain conditions, evaluating business performance using key performance indicators (KPIs), and determining strategic priorities based on their influence within the system. A descriptive qualitative method was applied using three analytical approaches: Hayami analysis to measure cost efficiency and value added; KPI evaluation to assess five aspects—production, marketing, raw material supply, human resources, and finance; and the Analytical Network Process (ANP) to prioritize business improvement strategies. The results show that Ma Utik's business system remains simple and unstandardized, with primary issues in production and marketing. Most performance indicators are still at the initial to intermediate stages, falling short of established targets. ANP findings highlight three key strategic indicators: distribution reach, process efficiency, and cassava raw material availability. The highest-priority strategy, with a score of 0.16, is Strategy C—developing digital marketing channels (e-commerce and social media). This strategy is deemed most relevant to expanding market reach and enhancing product competitiveness.*

***Keywords:*** *Business improvement strategy, Cilembu sweet potato, KPI, MSMEs, purple sweet potato*

## INTRODUCTION

Indonesia is a country rich in biodiversity, both in terms of agriculture, fisheries, and forestry. This abundant biodiversity plays a major role in boosting Indonesia's economy (Basyuni et al. 2022; Halimatussadiah et al. 2024; Lubis 2023). This is evident in the agricultural sector, which tends to be more stable than other sectors during times of crisis (Maulana et al. 2020).

One of the commodities that plays an important role in sustaining the country's economy is sweet potatoes from Cilembu Village. With a land area of 116 hectares and a total production of up to 1,460 tons per harvest, along with an average productivity of 17.43 tons per hectare, Cilembu sweet potatoes have proven their ability to penetrate both domestic and international markets, as noted by Handani and Trimo in 2021.

However, behind this potential, there are serious challenges faced by Cilembu sweet potato farmers and businesses. One of the main issues is the inconsistency in the size of the sweet potatoes, as well as the presence of sweet potatoes that are too large. This inconsistency, according to Idrus et al., (2024), often causes problems at the farmer level. When supply is abundant, especially from large or irregularly sized sweet potatoes that are difficult to market in fresh form, there is an imbalance between supply and demand, as pointed out by Silalahi et al., (2025). As a result, the price of sweet potatoes fell dramatically, even to Rp 8,000 per kilogram, far below its potential economic value.

Given this situation, the most relevant and strategic solution is through food diversification. Processing sweet potatoes into other forms such as chips, flour, or other products is a crucial step (Tedesco et al. 2023). As explained by (Palahudin et al. 2024), This diversification not only extends the shelf life of agricultural products, but also significantly increases their selling value and mitigates fluctuations in raw material prices.

In this context, this study focuses on 'Ma Utik' MSMEs, a business unit engaged in the processing of Cilembu sweet potato chips. 'Ma Utik' MSMEs have played an important role in processing Cilembu sweet potatoes and purple sweet potatoes into value-added products, especially chips, which are their flagship product.

Micro, Small, and Medium Enterprises (MSMEs) are currently experiencing a positive trend, with their numbers continuing to grow each year. According to Law No. 20 of 2008, MSMEs are defined as Micro Enterprises, which are productive businesses owned by individuals and/or individual business entities that meet the criteria for micro enterprises

as stipulated in the Law. Small businesses are independent productive economic enterprises operated by individuals or business entities and are not directly or indirectly part of medium or large businesses, in accordance with the criteria set forth in the Law. Medium-sized businesses are independent productive economic enterprises operated by individuals or business entities that are not directly or indirectly part of Small or Large Businesses, with net assets or annual sales in accordance with the provisions of the Law (Kementrian Keuangan Republik Indonesia, 2023).

Most MSMEs in Indonesia are home-based businesses that are able to absorb a large number of workers. According to data from the Ministry of Cooperatives and SMEs, in 2019 there were 65.4 million SMEs in Indonesia, which were able to absorb up to 123,300 workers. This indicates that SMEs make a significant contribution to reducing unemployment rates in Indonesia. The more workers involved in SMEs, the greater their role in reducing unemployment figures in the country (Kementrian Keuangan Republik Indonesia, 2023).

Currently, MSMEs are showing a positive growth trend with the number of business units continuing to increase every year. This growth has had a positive impact on the Indonesian economy. Based on data from the Ministry of Cooperatives and SMEs in 2023, MSMEs contributed 60.5% to the national GDP. This data shows the great potential of MSMEs to continue to be developed in order to make an even greater contribution to the country's economy (Kementrian Keuangan Republik Indonesia, 2023).

MSMEs play a crucial role in the Indonesian economy, particularly in creating jobs and supporting economic growth across various sectors. One sector that absorbs a significant amount of labor is the processing industry, which transforms raw materials into value-added products. According to Acting Head of the Central Statistics Agency (BPS), Amalia Adininggar Widyasanti, at a meeting organized by the Ministry of Cooperatives and SMEs in the Ministry's meeting room in Jakarta (March 26, 2024), from 2019 to 2022, the majority of SME workers were employed in the Agriculture, Trade, and Manufacturing sectors. One of the SMEs operating in the processing industry is “Ma Utik,” which specializes in cassava processing. “Ma Utik” is a household-based industry that processes cassava into food products such as cassava chips and cassava sticks. The primary raw materials used in the production of these processed food products are Cilembu cassava and purple sweet potato. Based on interviews conducted in 2024, the cassava used in the processing by the “Ma Utik” SME has two main characteristics: cassava categorized as Below Standard (BS) and large-sized cassava.

In carrying out its production activities, the MSME “Ma Utik” faces various problems, including limited production capacity, informal partnerships with suppliers, and an ineffective marketing system. The availability of cassava raw materials is not always guaranteed due to crop failures among cassava farmers, forcing Ma Utik to purchase raw materials from outside Java Island. Additionally, the absence of formal contracts with cassava suppliers could hinder production processes due to cassava shortages. The marketing system implemented by the SME “Ma Utik” is also deemed ineffective and relies solely on limited social media capabilities.

This research addresses critical gaps in the understanding and development of MSMEs in the Cilembu sweet potato processing sector, specifically focusing on the SME "Ma Utik" in Cilembu Village, Pamulihan District, Sumedang Regency. The study is motivated by several interconnected problems commonly faced by MSMEs in Sumedang, including: (1) marketing difficulties resulting from inadequate governmental promotional support and limited market access; (2) weak financial management practices characterized by the absence of separation between business and personal finances, leading to inaccurate profitability assessments; and (3) limited business development knowledge due to insufficient socialization and mentoring programs from relevant stakeholders.

More specifically, the case of Ma Utik SME reveals several operational and strategic deficiencies that warrant systematic investigation: First, the absence of comprehensive supply chain mapping prevents the business from identifying bottlenecks and optimization opportunities throughout the production and distribution process. Second, operational activities remain largely undocumented and unsystematic, making it difficult to maintain consistency, transfer knowledge to new employees, or identify areas for improvement. Third, business performance has not been evaluated using measurable and standardized indicators, resulting in subjective assessments and missed opportunities for data-driven decision-making. Fourth, the business lacks evidence-based strategies grounded in comprehensive analysis to enhance its competitiveness in an increasingly dynamic market environment.

The primary objectives of this research are fourfold: (1) to identify and map the complete supply chain of the Cilembu sweet potato chip processing industry at Ma Utik SME, from raw material procurement to final product distribution; (2) to analyze operational processes systematically, identifying inefficiencies and areas requiring improvement; (3) to evaluate current business performance using Key Performance Indicators (KPIs) across five critical dimensions—production, marketing and distribution, raw material supply, human resources and organization, and finance and funding; and (4) to formulate appropriate and evidence-based business development strategies using the Analytical Network Process (ANP) method to prioritize interventions that will have the greatest impact on business sustainability and growth.

The significance of this research is both theoretical and practical. From a theoretical perspective, this study contributes to the advancement of supply chain management science specifically in the MSME sector for agricultural product processing, with particular emphasis on Cilembu sweet potatoes as a local commodity with distinctive characteristics. The integration of Hayami analysis, KPI evaluation, and ANP methodology provides a comprehensive analytical framework that can be adapted for similar MSME contexts, thereby enriching the methodological repertoire available to researchers and practitioners in the field.

From a practical standpoint, this research delivers several valuable outputs: First, it provides Ma Utik SME with a comprehensive and objective overview of current business conditions, highlighting both strengths to be leveraged and

weaknesses to be addressed. Second, the analysis of operational efficiency and effectiveness offers concrete data on resource utilization, cost structures, and value creation processes, enabling more informed managerial decisions. Third, the data-driven strategic recommendations developed through ANP analysis are prioritized based on their potential impact, feasibility, and alignment with business capabilities, ensuring that limited resources are allocated to interventions with the highest return on investment.

The strategies developed are specifically designed to address the most pressing limitations faced by Ma Utik, including: inadequate production capacity that constrains the business's ability to meet increasing demand; unorganized administrative and financial management that obscures profitability and prevents accurate cost control; and the impact of rising prices of supporting materials, particularly cooking oil, which threatens profit margins and product competitiveness. Beyond benefiting Ma Utik directly, the findings and methodological approach can serve as a reference model for other MSMEs in the agricultural processing sector seeking to develop efficient and sustainable supply chains.

From a socio-economic perspective, this research promotes the strengthening of MSMEs' role as vital drivers of the local economy in Sumedang Regency and beyond. By enhancing the operational efficiency, financial sustainability, and market competitiveness of Ma Utik, this study contributes to: (1) job creation and retention in rural areas where employment opportunities are limited; (2) value addition to local agricultural commodities, thereby increasing farmers' income and reducing post-harvest losses; (3) preservation and promotion of local food culture, as Cilembu sweet potatoes represent a unique regional specialty with significant cultural and economic value; and (4) demonstration of viable pathways for other small-scale processors to transition from subsistence-oriented operations to commercially sustainable enterprises capable of competing in both local and national markets.

## METHOD

The research design “Formulation of a Supply Chain Strategy for Cilembu Sweet Potatoes in the Sweet Potato Chip Processing Industry (Case Study: Ma Utik SME, Cilembu Village, Pamulihan Subdistrict, Sumedang Regency, West Java)” was created by the researcher as a guideline for conducting research to achieve the objectives that had been set. This study employs a case study design to gain a deep understanding of the actual conditions and challenges faced by the SME “Ma Utik.” The case study was chosen by the researcher to explore various managerial and operational aspects in a real-world context and to develop business improvement strategies based on the specific conditions of the SME. This design allows the researcher to use a descriptive qualitative method with a quantitative approach.

Qualitative descriptive research with a quantitative approach was used to construct an analysis of the evaluation and identify the factors used as a basis for developing a business improvement strategy for the MSME “Ma Utik.” Meanwhile, the quantitative approach was used to provide a numerical overview of the evaluation and previous strategy development using the ANP (scoring pairwise comparison) method (Sunyono et al. 2023).

The analysis method used is Hayami's approach to analyze cost efficiency in the supply chain of the “Ma Utik” MSME (Sriwana et al. 2022), evaluate business performance using Key Performance Indicators (KPIs) (Soemohadiwidjojo 2018), Then, the Analytical Network Process (ANP) was used to calculate the priority weight of each element and determine the most important factors in improving supply chain efficiency (Bakhtiar et al. 2021).

This research was conducted between October 2024 and May 2025. The research was located at the “Ma Utik” MSME, Cilembu Village, Pamulihan District, Sumedang Regency, West Java. The research was conducted at the “Ma Utik” MSME because it is located in the Cilembu Village area, which is the largest producer of Cilembu sweet potatoes in West Java.

**Figure 1. Production house of MSME “Ma Utik”**

The Ma Utik MSME cassava chip production house was established in 2010 and currently employs nine people in its production process. In terms of operations, this MSME is generally divided into a production division and a marketing division. In addition to offline marketing, Ma Utik also markets its products online through social media and marketplaces.


**Figure 2. Map of Cilembu Village**

Cilembu Village itself is a village located in the Pamulihan District, Sumedang Regency. Cilembu Village is situated at the foot of Mount Kareumbi, southeast of the center of Pamulihan District. Cilembu Village is primarily composed of agricultural land mixed with plantation land, fields, rice paddies, and forestry areas. The total area of the village is 352 hectares, with 135 hectares of that used for residential areas, gardens, and public facilities. According to data from 2021, Cilembu Village has a population of 4,919 people (2,478 males and 2,441 females), with the majority of residents working as farmers (Susanti et al. 2021).

## RESULTS AND DISCUSSION

### General Conditions of the Research Location

The MSME operator "Ma Utik" is Mrs. Utik, who has been running this business since 2011. The business is located in Cilembu Village, Pamulihan District, Sumedang Regency, West Java. This business, which was started in 2011 by Mrs. Utik, utilizes the local potential of cilembu sweet potatoes, which are unique to the area. The business is located in an agricultural area with expansive Cilembu sweet potato fields, surrounded by the cool mountain air that is characteristic of this region. Access to the location is relatively easy via the regency road, although transportation infrastructure still needs improvement.

Historically, this cassava chip business originated from Abah Dayat (Ma Utik's husband) who, in 2011, during the cilembu cassava harvest, found that the cassava produced was of low grade and therefore unsellable on the market. Ma Utik then took the initiative to process the Cilembu sweet potatoes into donuts and sweet potato sticks. However, donuts have a short shelf life, so in 2013, Ma Utik sought an alternative food diversification option with a longer shelf life, namely sweet potato chips. The name "Ma Utik" was eventually chosen as the brand name because at the time, cassava chips named "Ma Icih" were trending.

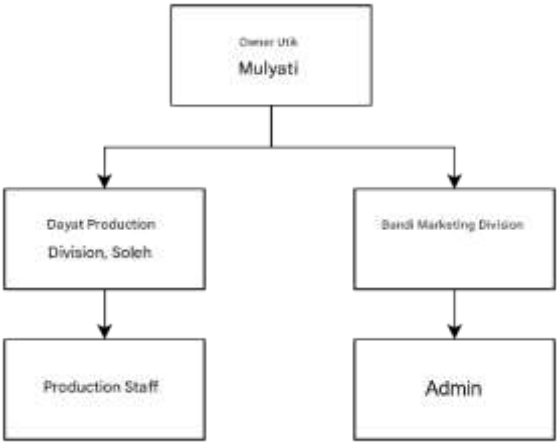


**Figure 3. Organizational Structure of Ma Utik**

In its organizational structure, Ma Utik, as the business owner, is responsible for all activities and employees while ensuring that all activities run smoothly. The production division is responsible for the availability of raw materials and

the process of producing products through to packaging. Meanwhile, the marketing division is responsible for product sales, promotion, and cooperation with other parties.

The SME "Ma Utik" has a vision of "Achieving a prosperous farming community through the utilization of backyard gardens, food crop resources, and competitive and sustainable processed product diversification." The mission of the SME "Ma Utik" is as follows:

1. Developing backyard farming to increase production and add value
2. Empowering farmers to become strong and independent institutions
3. Improving agricultural cultivation skills and developing agribusiness
4. Diversifying local food products, especially cilembu sweet potatoes

This business operates a simple production facility covering an area of approximately 50 square meters, divided into several work areas. The production area is equipped with manual tools and several modern machines for processing, including peeling, frying, and packaging. Its flagship product is Cilembu sweet potato chips in 250-gram packages priced at Rp15,000, as well as new innovations such as "Sistik Ubi" and Cilembu sweet potato dodol.

Product marketing is conducted through two main channels: offline through local shops and souvenir stores, and online through e-commerce platforms and social media. The distribution network currently covers the Sumedang area and its surroundings, with the distinctive "Ma Utik" branding serving as the product's identity.

Despite its significant potential as a regional specialty souvenir, this business faces several challenges, including reliance on seasonal cassava supplies, competition with similar products, and limited capital for development. However, with abundant local raw materials and growing tourist interest, this SME has great potential for growth, particularly through optimizing digital marketing and enhancing production capacity. The research location was chosen because it represents both the potential and challenges faced by SMEs based on local commodities in rural areas.

**Overview of the Supply Chain**

The supply chain of the MSME "Ma Utik" consists of a sweet potato supplier warehouse, the MSME "Ma Utik" as a sweet potato chip producer, sweet potato chip suppliers, and retailers. Their activities are described in Table 1. There are three types of flows in this supply chain, namely goods, money, and information flows.

**Table 1. Supply chain members**

| Level | Member | Process | Activities |
|---|---|---|---|
| Level | PT Bonavista | Cultivation, purchasing, storage, washing, grading, packaging, and sales. | Cultivating sweet potatoes, purchasing sweet potatoes from farmers, storing sweet potatoes in warehouses, washing, grading, and packaging sweet potatoes for sale, and selling them to producers. |
| Manufacturer | UMKM "Ma Utik" | Purchasing, storage, production process, packaging, sales | Purchasing from PT Bonavista, storing sweet potatoes, processing sweet potatoes into chips, and selling chips to sweet potato chip suppliers. |
| *Sweet Potato Chip Supplier* | Mr. Fuad and Mr. Herman | Purchasing, sales | Purchasing from MSME "Ma Utik" and selling to retailers |
| Retail | Store | Sales | Selling to end consumers. |

The quality of Cilembu sweet potatoes in this supply chain is classified into three categories, as shown in Table 1. The grade used in processing sweet potatoes into chips is grade BS. The large size of grade BS sweet potatoes makes the production process efficient, and their low purchase price reduces production costs.

**Table 2. Specifications for sweet potato grades**

| Quality | Specifications | Weight | Price (Rp/kg) |
|---|---|---|---|
| Grade A | Small size with a weight of approximately 100-200 grams per tuber. The tuber is whole, unbroken, and free from pests or damage. | 100-200 gram | 7000 |
| Grade B | Medium size with a weight of 300-400 grams per tuber. The tubers are in good condition, free from defects or damage. | 300-400 gram | 6000 |

| Quality | Specifications | Weight | Price (Rp/kg) |
|---|---|---|---|
| Grade BS (Bad Standard) | Too large in size and shape does not meet market standards for direct sale. May have imperfect shapes or minor defects, but still suitable for processing. | 700-800 | 5000 |

This supply chain involves various resources, including technology, human resources, and capital. The limited technological resources include production equipment used by the MSME "Ma Utik," such as ovens, dough grinders, spinners, stoves, and sealers. Human resources consist of employees who are tasked with the chip production process. In one production process, Ma Utik requires seven employees who are paid on a daily wage basis.

To ensure effective supply chain management, certain criteria are required in selecting partners, as explained in Table 3. In this supply chain, there is no contractual agreement between the company and retailers, while the relationship between cassava suppliers, producers, chip suppliers, and retailers is based on personal, technical, and market approaches. Contracts between the company and retailers are not made because the SME "Ma Utik" does not want to be bound by any party due to its limited production capacity. Therefore, the purchasing system is not scheduled in a contract but is conducted through a PO or Pre-Order system to ensure demand before producing in large quantities.

**Table 3. Criteria for selecting partners**

| *Sweet Potato Supplier* | *Chip Supplier* |
|---|---|
| 1. Able to supply sweet potatoes that meet specifications | 1. Making purchases with the Pre-Order system |
| 2. Close to the production house | 2. Not contractually binding |
| 3. Able to ship products upon request | |

The supply chain of the "Ma Utik" MSME faces various challenges in carrying out its production activities. One of the main obstacles is limited production capacity, which means that this MSME only accepts orders through a pre-order (PO) system and is reluctant to enter into contracts with buyers. Additionally, irregular administrative or accounting management makes it difficult to monitor expenses, particularly raw material purchases, thereby impacting cost control and profit calculations. The increase in cooking oil prices, as the main supporting material, also adds to production costs. To address this, efficiency strategies such as reducing packaging costs are chosen to maintain the product's competitiveness in the market, although these adjustments may affect product quality or consumer perception.

Table 4 shows the value-added analysis of Cilembu honey sweet potato chips by the SME "Ma Utik" using the Hayami method, starting with identifying the basic production components, including output, input, and price. In one production process,

**Table 4. Calculation of Added Value of Cilembu Sweet Potato Chips**

| No. | Variable | Value | |
|---|---|---|---|
| OUTPUT, INPUT, AND PRICE | | | |
| 1 | Output produced (kg/production process) | 80.00 | A |
| 2 | Raw materials used (kg/production process) | 250.00 | B |
| 3 | Labor (HOK) | 7.00 | C |
| 4 | Conversion factor (1/2) | 0.32 | D = A / B |
| 5 | Labor coefficient (3/2) (HOK/kg) | 0.03 | E = C / B |
| 6 | Output price (Rp/kg) | 55000.00 | F |
| 7 | Average labor wage (Rp/HOK) | 78571.43 | G |
| REVENUE AND PROFIT | | | |
| 8 | Raw material price (Rp/kg of raw material) | 5000.00 | H |
| 9 | Other input contributions (Rp/kg of output) | 9333.33 | I |
| 10 | Output value (4x6) | 17600.00 | J = D x F |
| 11 | a. Value added (10-9-8) (Rp/kg) | 3266.67 | K = J - H - I |
| | b. Value added ratio (11a/10 x 100%) (%) | 18.56 | L% = K / J x 100% |
| 12 | a. Labor compensation (5x7) (Rp/kg) | 2200.00 | M = E x G |
| | b. Labor share (12a/11a x 100%) (%) | 67.35 | N% = M / K x 100% |
| 13 | a. Profit (11a-12a) (Rp/kg) | 1066.67 | O = K - M |
| | b. Profit margin (13a/11a x 100%) (%) | 6.06 | P% = O / J x 100% |
| REWARDING THE OWNERS OF PRODUCTION FACTORS | | | |
| 14 | Margin (Rp/kg) | 12600.00 | Q = J - H |
| | a. Labor income (12a/14 x 100%) (%) | 17.46 | R% = M / Q x 100% |
| | b. Other input contributions (9/14 x 100%) (%) | 74.07 | S% = I / Q x 100% |

| No. | Variable | Value | |
|---|---|---|---|
| | c. Profit (13a/14 x 100%) (%) | 8.47 | T% = O / Q x 100% |

Based on Table 4, MSMEs produce 80 kg of chips from 250 kg of cassava raw materials. This process involves the use of 7 man-days of labor, with a raw material conversion rate of 0.32 (32%). This means that every 1 kg of raw material produces approximately 0.32 kg of finished product. The labor coefficient is recorded at 0.03 HOK per kilogram of raw material, while the selling price of chips reaches Rp55,000 per kilogram and the average labor wage is Rp78,571.43 per HOK.

In terms of revenue and profit, the price of raw materials at Rp5,000 per kilogram generates other input contributions (such as packaging and energy) of Rp9,333.33 per kilogram of output. Total revenue from output reaches Rp4,400,000, while total raw material costs amount to Rp1,250,000. From these calculations, the value added per kilogram of output is Rp3,266.67. The value-added-to-output ratio is 18.66%, indicating the proportion of the processing contribution to the final product value. The labor compensation in the value added is Rp2,200 per kilogram, equivalent to 67.32% of the total value added. After deducting labor compensation, the net profit obtained is Rp1,066.67 or 32.68% of the value added.

From the perspective of the owners of production factors, the profit margin (the difference between output revenue and the cost of primary raw materials) is Rp3,850 per kilogram of output. Of this amount, labor receives 17.46%, while other inputs receive 24.24%. The remainder, which is 8.47% of the margin, is the net profit enjoyed by business owners.

Overall, the results of this analysis show that the sweet potato chip processing business run by the MSME “Ma Utik” is capable of creating significant added value and making a substantial contribution to workers' income. The dominance of labor in the distribution of added value also indicates that this business is labor-intensive. However, raw material efficiency and profit optimization can still be improved, either through reducing production waste or by increasing product capacity and quality. The implications of this analysis highlight the importance of implementing several improvements, including: (1) optimizing raw material usage to enhance production efficiency, (2) investing in technology and mechanization to reduce reliance on manual labor, and (3) developing a better pricing strategy to increase profit margins.

**Evaluating Business Performance with KPIs**

The Key Performance Indicator (KPI) identification process was carried out to determine which indicators influence the improvement of efficiency and competitiveness of the management of the MSME “Ma Utik”. KPIs are used to compare current actual performance with ideal performance, which is the next target. The KPI identification process was carried out through direct observation and interviews with staff or workers at the “Ma Utik” SME, particularly Sobandi, who is a marketing staff member with an understanding of the daily technical aspects of the production and marketing processes.

In the process of evaluating the business performance of the MSME “Ma Utik” using Key Performance Indicators (KPIs), the researcher appointed Sobandi as the sole evaluator. This selection was based on several key considerations relevant to the actual conditions of micro businesses in the field. Sobandi is both a staff member and the main manager of the MSME “Ma Utik,” directly involved in all operational activities, from raw material procurement, production processes, to product marketing and distribution. As such, Sobandi possesses the most comprehensive and in-depth knowledge of every aspect of business performance, including production, marketing, raw material supply, human resources, and finance. This direct knowledge and experience are crucial in ensuring that the assessment of the performance indicators used truly reflects the actual conditions and challenges faced by the SME.

Then, based on observations and interviews conducted during the research, it was found that the organizational structure of the “Ma Utik” MSME was still very simple and most strategic and operational decisions were made by Sobandi himself. This is in line with the general characteristics of MSMEs in Indonesia, where limited human resources mean that key roles are often held by the most competent and experienced person (Mukoffi et al. 2021). In this context, involving other parties who do not understand the business process in detail may lead to bias or inaccuracy in KPI assessment.

However, to improve the objectivity and validity of future evaluations, it is recommended that training or knowledge transfer be provided to other team members so that performance evaluations can be conducted more collectively and sustainably. Thus, the appointment of Sobandi as the sole KPI evaluator in this study was a logical decision in line with the actual conditions of the Ma Utik MSME and supported by common practices in microenterprises in Indonesia.

The evaluation process carried out by Sobandi was used to adjust the indicators developed to the actual conditions in the field. Validation was carried out by aligning the indicators with actual practices and the current recording

capabilities of Ma Utik. From this process, it was determined that there are five main aspects as key performance indicators, namely production, marketing & distribution, raw material supply, organization & human resources, and finance & funding, with the following analysis:

**Table 5. Production aspect KPIs**

| Sub-Criteria | Key Performance Indicator | Current Performance Value | Target |
|---|---|---|---|
| Process Efficiency | Number of production batches per month | 4 batch | + |
| Production Capacity | Monthly production capacity and output:raw material input ratio | 2400kg cassava/month<br>200kg cassava/batch<br>With a ratio of output:input = 30% | + |
| Processing Technology/Equipment | Presentation of modern machines used | 60%<br>Machinery currently in use: dough grinder, oven, spinner, stove, and sealer | 60%<br>Machinery currently in use: dough grinder, oven, spinner, stove, and sealer |

Based on Table 5, Ma Utik's current production capacity is still limited, at only 2,400 kg of cassava per month, which then produces around 720 kg of chips per month. This means that the output-to-input ratio is 30%, indicating inefficiency in the utilization of raw materials. Additionally, only 60% of the machinery is considered modern, and production per batch remains low, at 4 batches per month. To improve efficiency, modernization of equipment is needed, targeting 80% modern machinery, the addition of machinery such as slicing/cutting machines, and an increase in the number of production batches. This will maximize production capacity and reduce raw material waste, thereby lowering operational costs.

**Table 6. KPIs for marketing & distribution aspects**

| Sub-Criteria | Key Performance Indicator | Current Performance Value | Target |
|---|---|---|---|
| Branding & Packaging | Percentage of online purchases and social media and marketplace visualization | 60%<br>Social media and marketplace visualization as is | Improving social media and marketplace designs |
| Product Innovation | Number of new variants in 1 year | 2 new product variants (spicy sistik and salty sistik) | Add product variety to attract online shoppers |
| Distribution Reach | Active distribution area | Bandung, Jakarta, Central Java, East Java, Bali, Makassar, Riau, Palembang, and Medan | ++ |

Based on Table 6, Ma Utik's digital branding is still weak, with only 60% of purchases coming from online channels. Activity on platforms such as TikTok and Shopee is also suboptimal, while the Instagram design is considered outdated. Product innovation is also limited, with only two new variants introduced per year. To address this, a branding revitalization is needed, featuring a more modern design and interactive content, increased activity on TikTok through regular live streams, and the development of new product variants. These steps will help attract more online customers and expand the market.

**Table 7. Raw Material Supply KPIs**

| Sub-criteria | *Key Performance Indicator* | Current Performance Value | Target |
|---|---|---|---|
| Long-Term Partnership with Sweet Potato Suppliers | Number of formal partners | Informal (2 suppliers) | There are no plans to formalize the supplier partnership (with a contract). |
| Availability of Sweet Potatoes | Average monthly inventory | 200-300kg/month (Amount stored as reserve stock) | Increase efficiency and capacity so that too |

| Sub-criteria | *Key Performance Indicator* | Current Performance Value | Target |
|---|---|---|---|
| | | | much raw cassava is not stored for too long. |
| Stability of Raw Material Prices | Fluctuations in sweet potato prices over the past 6 months | Up and down 500-1000/kg | No specific targets |

Based on Table 7, currently, partnerships with suppliers are still informal, sweet potato stocks often fluctuate between 200-300 kg per month, and raw material prices fluctuate, although not significantly, ranging from Rp500-1,000 per kg. To create supply stability, it is necessary to formalize long-term partnerships with suppliers and implement more efficient inventory management. As a result, production can proceed smoothly without being disrupted by supply and price uncertainties.

**Table 8. Organizational & Human Resources KPIs**

| Sub-Criteria | *Key Performance Indicator* | Current Performance Value | Target |
|---|---|---|---|
| Adaptation to Market Changes | Number of market/innovation training sessions | Not yet | Improving social media visuals and consistency |
| Workforce Capabilities | Productivity per batch | 10 kg/person/batch | No plans to hire more workers yet |
| Effective Management Systems | Availability of SOPs and documentation systems | It exists, but it is not written down. | Have written SOPs |

Based on Table 8, this year, Ma Utik has not undergone a market adaptation training program for her human resources, SOPs have not been properly documented, and labor productivity remains low, at only 10 kg per person. Enhancing human resource capacity through production and marketing skills training, developing written SOPs, and optimizing productivity through clear task allocation are crucial steps toward creating more structured and efficient operations.

**Table 9. Financial & Funding KPIs**

| Sub-Criteria | *Key Performance Indicator* | Current Performance Value | Target |
|---|---|---|---|
| Access to External Funding | Amount of funding accessed | No | No plans |
| Cost Management Capabilities | Ratio of raw material costs to total costs | 80% | There are no plans to reduce the cost of purchasing raw materials. |
| Availability of Working Capital | Active cash capital | Enough | No plans to seek additional capital through loans |

Based on Table 9, Ma Utik is not interested in accessing external funding in the form of credit or loans. Meanwhile, it is known that the raw material cost ratio reaches 80% of the total cost and financial planning has not been carried out formally. To improve this condition, diversification of funding sources, production cost efficiency, and the preparation of regular financial reports are needed so that strategic decision-making can be more accurate and focused.

All of these KPIs are used as the basis for developing the Analytical Network Process (ANP) structure in the next stage. By integrating the five KPIs into the ANP, a more integrated strategy will be produced, taking into account the interrelated impacts of the criteria and sub-criteria that have been developed.

**Priority Analysis of Performance Indicators for Ma Utik MSMEs**

Based on the ANP model framework that has been developed based on model construction, ANP model validation was carried out by forming an ANP network that has interdependence and outer dependence relationships in the SuperDecisions 3.2 application.

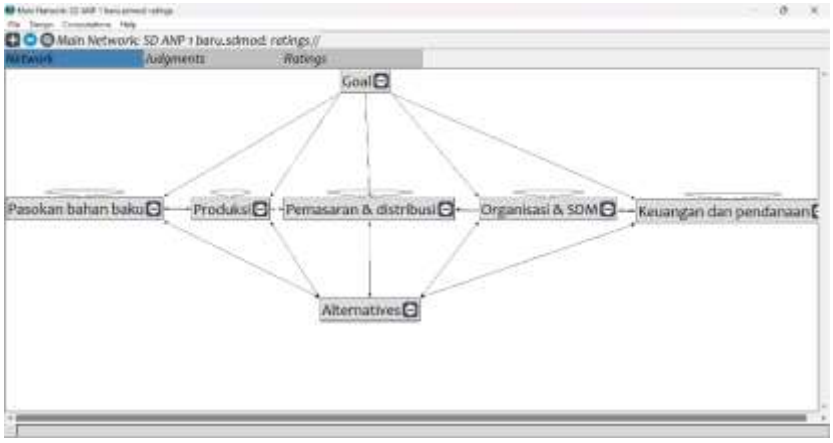


**Figure 4. ANP network in SuperDecisions 3.2**

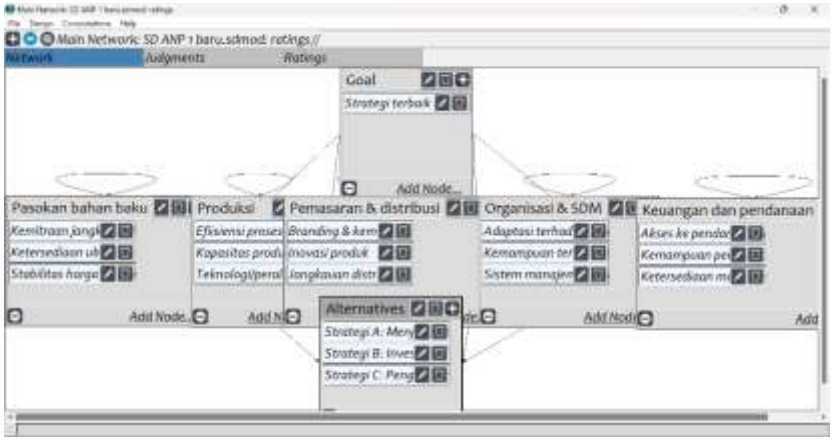


**Figure 5. ANP network and nodes in SuperDecisions 3.2**

Based on Figures 4 and 5, the ANP network structure shown in the figure illustrates a framework in which interacting elements are considered comprehensively. At the top of the network is the goal element, "Best Strategy," which is the primary objective of this evaluation process. To achieve this goal, there are five main criteria groups that influence the strategy determination process: raw material supply, production, marketing & distribution, organization & human resources, and finance & funding. Within these criteria are sub-criteria as listed in Table 9.

At the bottom of the network are alternative elements, namely three strategies that will be evaluated based on the influence of each criterion. The three strategies are: Strategy A (Establishing formal partnerships with sweet potato suppliers), Strategy B (Investing in tools and training to increase production capacity), and Strategy C (Developing digital marketing channels (e-commerce and social media)). Each of these strategies will be assessed through mutually influencing relationships with the criteria and sub-criteria elements, in accordance with the non-hierarchical nature of ANP, which allows for feedback relationships between elements.

**Table 10. ANP Priorities**

| | ***Priorities*** | |
|---|---|---|
| ***Name*** | ***Normalized By Cluster*** | ***Limiting*** |
| Strategy A: Establish formal partnerships with sweet potato suppliers | 0.24865 | 0.100634 |
| Strategy B: Invest in equipment and training to increase production capacity | 0.36068 | 0.145973 |
| Strategy C: Development of digital marketing channels (e-commerce and social media) | 0.39067 | 0.158112 |
| Best strategy | 0 | 0 |
| Access to external funding | 0.04443 | 0.0038 |
| Cost management capabilities | 0.74911 | 0.064074 |

| | Priorities | |
|---|---|---|
| **Name** | **Normalized By Cluster** | **Limiting** |
| Availability of working capital | 0.20646 | 0.017659 |
| Adapting to market changes | 0.13865 | 0.011596 |
| Workforce capabilities | 0.76488 | 0.063969 |
| Effective management system | 0.09647 | 0.008068 |
| Long-term partnership with sweet potato suppliers | 0.04283 | 0.0038 |
| Availability of cassava | 0.7769 | 0.068934 |
| Stability of raw material prices | 0.18028 | 0.015996 |
| Branding & packaging | 0.15748 | 0.026185 |
| Product innovation | 0.26185 | 0.043539 |
| Distribution range | 0.58067 | 0.096549 |
| Process efficiency | 0.43398 | 0.074258 |
| Production capacity | 0.34362 | 0.058798 |
| Processing technology/equipment | 0.2224 | 0.038055 |

Table 10 presents the strategy priorities and criteria obtained through the ANP process using SuperDecisions. Of the three strategy alternatives analyzed, Strategy C (Development of digital marketing channels through e-commerce and social media) emerged as the best choice with a global priority value of 0.158 or 15.8%. This strategy is considered the most effective due to its significant impact on expanding distribution reach (0.096) and product innovation development (0.043). Strategy B (Investing in equipment and training to enhance production capacity) ranks second with a priority of 0.146 (14.6%), primarily supported by increased production capacity (0.058) and strengthened processing technology (0.038). Meanwhile, Strategy A (Establishing formal partnerships with cassava suppliers) has the lowest priority at 0.101 (10.1%), due to its more limited impact on raw material supply aspects.

Some key criteria that are the main drivers of these strategies include distribution reach with a value of 0.096, process efficiency (0.074), and cassava availability (0.068). These results indicate that the development of digital marketing is the most impactful strategic step for business development. However, if possible, combining Strategy C and Strategy B could provide better synergy by combining marketing enhancement and production capacity improvement.

The values in the 'Normalized By Cluster' column indicate the relative dominance of each element in its cluster, such as the distribution range reaching 0.58 in the Marketing and Distribution cluster. Meanwhile, the 'Limiting' value describes the contribution of each element to the overall objective. In this case, the distribution range contributes 9.6%.

Based on this analysis, it can be concluded that focusing on developing digital marketing is the main strategy that needs to be prioritized, supported by investment in increasing production capacity as a complementary strategy. Meanwhile, strengthening partnerships with suppliers can be a secondary priority. These results provide a strong basis for strategic decision-making in business development.

**Formulation of Marketing Strategies Based on the Marketing Mix**

Based on the results of the Analytic Network Process (ANP) analysis, the strategy with the highest priority weight is Strategy C: Development of digital marketing channels through e-commerce and social media. This strategy is the primary alternative to support the improvement of competitiveness and market reach for the "Ma Utik" SME, particularly in strengthening the distribution and marketing aspects, which are currently still limited. To support the implementation of this strategy, a follow-up strategy was formulated using the Marketing Mix 4P approach (Product, Price, Place, Promotion) as follows:

1) *Product*

In terms of products, Ma Utik offers cassava-based food products, specifically chips and sitik made from Cilembu Cassava and Purple Cassava. These products are unique in terms of taste and local ingredients, as well as their nutritional content. Cilembu Cassava is known to have a very high vitamin A content, reaching 8,509 mg. This amount is significantly higher than other tubers, which typically contain vitamin A levels between 60 and 7,700 mg per 100 grams. The abundant vitamin A content in Cilembu sweet potatoes is highly beneficial for improving nutritional status, particularly for individuals with vitamin A deficiency, and can also help reduce insulin resistance (Almadania et al. 2019).

In addition, Cilembu sweet potatoes have a natural sweetness that can reduce the need for added sugar in daily consumption. This sweet potato also contains 46 mg of calcium per 100 grams, which plays a crucial role in bodily metabolic processes and helps strengthen bones and teeth. Furthermore, Cilembu sweet potato contains 0.08 mg of vitamin B-1, 0.05 mg of vitamin B-2, 0.9 mg of niacin, and 20 mg of vitamin C (Almadania et al. 2019).

The business strategy implemented by the MSME "Ma Utik" in terms of products is focused differentiation, which emphasizes the uniqueness and superiority of Cilembu cassava chips compared to similar products on the market (Aurellia et al. 2025). Differentiation is achieved through the selection of high-quality raw materials, namely authentic Cilembu sweet potatoes, which have a naturally sweet taste and distinctive texture, as well as a production process that preserves crispness and authentic flavor. In addition, the product packaging is designed to be attractive and hygienic to enhance the perception of quality and added value in the eyes of consumers. Diversification of flavor variants is also developed to cater to diverse consumer preferences, ensuring the product competes not only on price but also on unique characteristics and consumption experiences.

However, to compete in the digital market, improvements in visual appeal and differentiation are necessary. One approach that can be taken is to refine packaging to make it more aesthetically appealing and functionally informative, for example by including nutritional information, expiration dates, and a brief story about the origin of the sweet potatoes used. Additionally, developing flavor variations and packaging sizes can also be a strategy to attract consumers seeking flexible options on e-commerce platforms.

2) *Price*

In terms of pricing, MSME "Ma Utik" needs to consider a competitive pricing strategy that maintains profit margins. Since marketing will focus on digital channels, product prices must be adjusted to the preferences and expectations of online consumers, who tend to be price sensitive. Strategies such as bundling prices (e.g., buy three flavors at once with a discount), seasonal discount offers, or free shipping programs can be implemented to attract new customers.

Ma Utik MSME implements a competitive pricing strategy by adjusting product prices to remain competitive with other sweet potato chip products in the local and online markets. Pricing is determined through analysis of competitor prices in the marketplace and consideration of production costs and reasonable profit margins.

**Table 11. Competitor price table**

| No | Chips | Description | Price |
|---|---|---|---|
| 1. | Ma Utik Sweet Potato Chips | Weight: 150 grams | Rp16.000 |
| |  **Figure 6. Ma Utik Chips** | | |
| 2. | Whole Yellow Ube Chips | Weight 90 grams | Rp35.100 |
| |   **Figure 7. Whole Chips** | | |
| 3. | Bionic Farm Sweet Potato Chips | Weight 50 grams | Rp15.000 |


**Figure 8. Bionic Farm Chips**

Based on Table 11 regarding competitor prices, it can be seen that Keripik Ubi Ma Utik offers a product weighing 150 grams for Rp16,000. When compared to other competitors, such as Whole Chips Yellow Ube Sweet Potato Chips, which are sold at Rp35,100 for a 90-gram weight, and Bionic Farm Sweet Potato Chips at Rp15,000 for a 50-gram weight, the price set by Ma Utik is highly competitive. This can be seen from the price-to-weight ratio, where Ma Utik provides more product at a relatively more affordable price per gram compared to its two competitors.

The pricing strategy implemented by Ma Utik is in line with the competitive pricing approach, which involves adjusting prices to remain competitive in the market without compromising product quality. In addition, the prices offered also take into account value-based pricing, where consumers get more value in terms of product quantity and quality. While competitors like Whole Chips Yellow Ube target the premium segment with significantly higher prices, Ma Utik remains focused on the mid-range market segment that prioritizes a balance between price and quality.

In addition, a value-based pricing approach is also used, whereby product prices are adjusted according to the added value perceived by consumers, such as the quality of raw materials, unique flavors, and premium packaging. Thus, consumers are not only paying for the product, but also for the experience and value provided by Cilembu "Ma Utik" sweet potato chips.

3) *Place*

The main distribution channels used are social media and digital marketplaces. The SME "Ma Utik" actively utilizes Instagram and TikTok as its primary platforms for promotion and interaction with consumers. Through Instagram, products are marketed using visually appealing content, customer testimonials, and educational content about the benefits of Cilembu sweet potatoes. TikTok is used to create short videos showcasing the production process, product reviews, and live selling sessions that can reach a wider audience in real time. For sales transactions, the SME "Ma Utik" relies on e-commerce platforms such as Shopee and TikTok Shop features, enabling consumers to easily purchase products online without geographical restrictions. This strategy expands market reach while enhancing distribution efficiency.

One challenge that needs to be anticipated is the potential surge in orders if the digital strategy successfully increases product exposure significantly. Therefore, a pre-order system with daily stock limits and efficient logistics arrangements is essential to maintain customer satisfaction. In addition, cooperation with local and national logistics services will streamline the distribution process, especially in meeting demand from outside the Sumedang area.

4) *Promotion*

In terms of promotion, the MSME "Ma Utik" can utilize social media as the main channel to build brand awareness and persuade consumers. Actively managing business accounts on Instagram, TikTok, and Shopee with engaging content such as product photos, production process videos, customer testimonials, and stories about cassava farmers as the main suppliers can strengthen the image of authentic and high-quality local products. Live selling through TikTok Shop and Shopee is also a relevant strategy, given the growing trend of online shopping via live streams. To expand reach, Ma Utik can also consider using paid advertising features (micro ads) with a small budget, which have proven effective in increasing product visibility to specific target markets.

The main focus of promotion is to increase brand awareness through various digital marketing activities. MSME "Ma Utik" regularly holds promotional campaigns on social media, such as giveaways, special discounts, and product bundling. Collaborations with local influencers and the use of live streaming features on TikTok are also carried out to strengthen the brand image and expand the audience reach. Additionally, the use of specific hashtags and interactive content on Instagram and TikTok aims to build a loyal customer community and increase brand exposure among young consumers and active social media users. With an integrated promotional strategy, it is hoped that the "Ma Utik" brand will become widely recognized and top of mind in the premium sweet potato chip segment.

By strengthening the four main elements of the marketing mix, Strategy C as a priority strategy can be translated into concrete actions that support the growth of Ma Utik's MSME business in a more sustainable and competitive manner in the digital market. This approach not only serves as an operational marketing framework, but also as a bridge between strategic planning and tactical implementation in the field.

## CONCLUSION

Research on "Developing Strategies to Improve Business in the Cilembu Cassava Chip Processing Industry" at the "Ma Utik" SME shows that the business supply chain is still simple and informal, with a pre-order system and no formal partnerships with suppliers or distributors. Operations are conducted manually without written standard operating procedures (SOPs), using traditional equipment, and without adequate documentation, resulting in low production efficiency with an output-to-input ratio of only 30%. Financial record-keeping remains simple and intermingled with personal finances, making profitability analysis difficult. Performance evaluation based on KPIs shows that aspects of production, marketing, finance, raw material supply, and human resources are not yet optimal, with the main need being to improve production efficiency and workforce capacity. ANP analysis recommends the main strategy of developing digital marketing channels through e-commerce and social media, supported by increased distribution reach, process efficiency, and raw material availability. Research recommendations include expanding the study scope to include other local food SMEs to broaden generalizations, integrating supply chain risk analysis to anticipate uncertainties, and examining environmental and social sustainability aspects to make the resulting strategies more holistic.

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