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Analysis of industrial management and value added of bandeng satay production (case study: MSME Hj Mariyam in Serang Banten)

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ABSTRACT

MSMEs have a strategic role in the Indonesian economy, especially as a driver of the people's economy, a provider of employment, and a motor of local innovation. This study aims to analyze industrial management and added value in processed milkfish satay products through a case study of MSME Hj. Mariyam in Serang City.The method used is a case study with a qualitative descriptive approach. The main respondent in this study is the owner of the UMKM business, Hj. Mariyam. Data collection techniques are carried out through interviews and direct observation of the production process at the business location. Analysis of added value is carried out using the Hayami method, based on the input unit of 1 kg of milkfish. The results show that although the business has a simple management structure and operates efficiently, there are still obstacles in market expansion, as well as in improving packaging quality and branding. The value-added analysis indicates the potential for profit enhancement through optimization of production and marketing processes. These findings provide a foundation for policy-making in empowering MSMEs based on local potential and developing the fishery processing industry in the region.

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1. INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) play a strategic role in Indonesia's economy, particularly as drivers of the people's economy, providers of employment, and engines of local innovation. According to the Law of the Republic of Indonesia No. 20 of 2008 concerning MSMEs, a micro enterprise is a productive business owned by an individual and/or individual business entity with a net worth of up to Rp50 million, excluding land and buildings for business use, while a small enterprise has a net worth greater than a micro enterprise, up to a maximum of Rp500 million.

One of the main challenges in MSME management is the aspect of industrial management, which includes production planning, operational efficiency, quality control, and distribution. Without a proper management system, MSMEs will struggle to grow and compete, especially in facing modern markets that demand efficiency, consistent quality, and technological adaptation (Tambunan, 2019).

On the other hand, value-added analysis is an important indicator to measure the contribution of a production process to the economic value enhancement of a product. Value added not only

reflects business efficiency but also serves as a basis for determining product development strategies and industry policies based on local potential (Hayami & Ruttan, 1987). Through this analysis, business actors can identify which elements in the production process provide the highest profit margins, enabling optimization efforts.

Serang City, as the capital of Banten Province, has great potential in developing local food industries. One of the signature products that has become a regional culinary icon is milkfish satay, a preparation of deboned milkfish seasoned in a unique way and grilled like traditional satay. This product is widely developed by household-scale MSMEs that have been sustained over generations. Based on data from the Department of Industry and Trade of Serang (2010) and Wulandari (2012), there are at least 15 small businesses engaged in processing and marketing milkfish satay in the Serang City area.

According to the Central Statistics Agency of Banten Province, (2023), the fish processing industry including milkfish satay is one of the MSME subsectors that contributes significantly to the regional economy, particularly in terms of job creation and increasing community income. Meanwhile, the Banten Province Marine and Fisheries Office (2022) notes that the fish processing industry, especially milkfish satay, continues to grow in line with rising demand from both the local market and tourists.

Although milkfish satay is widely recognized, its business management largely remains traditional, undocumented scientifically, and faces various obstacles in business recording, production management, and marketing strategies (Ministry of Cooperatives and MSMEs, 2020). Traditional management practices tend to result in several problems, including the lack of proper business documentation, as traditional MSMEs often do not maintain accurate bookkeeping or financial records, making it difficult to assess profit and loss precisely or access capital and government assistance (Ministry of Cooperatives and MSMEs, 2020). In addition, the production technology used remains basic and manual, leading to low productivity and inconsistent product quality (Gaspersz, 2006). In the marketing aspect, traditional MSMEs generally rely only on local markets or direct selling without digital promotion, limiting market growth and making it difficult to compete with modern or branded products (Ministry of Industry RI, 2021). Moreover, without good raw material inventory management, MSMEs are vulnerable to rising production costs and reduced profit margins when raw material prices increase (Ministry of Marine Affairs and Fisheries RI, 2020).

Although various studies have discussed the development of processed fish products on an MSME scale, there are still limited studies that specifically examine the relationship between industrial management and the creation of added value in regional culinary products such as milkfish satay. Previous studies generally only focused on the technical aspects of production or marketing separately, without comprehensively linking the management chain from raw material procurement, production processes, to distribution strategies and their economic implications. Therefore, this study is directed to fill this gap by focusing on a comprehensive analysis of industrial management and estimating the added value generated from milkfish satay processing activities at MSME Hj. Mariyam, Serang - Banten.

2. METHOD

2.1 Time and Location

This research was conducted in May 2025 at the milkfish satay production house of Hj. Mariyam, located at Jl. Kiuju No. 63, Kaujon Tengah, Serang City, Banten.

2.2 Data Analysis

This study applied the purposive sampling technique, which is a sampling method based on specific considerations. These considerations may be based on the research objectives, subject characteristics, or the depth of information that respondents can provide (Sugiyono, 2017).

The data analysis used in this research is a value-added analysis based on the Hayami Method. This method takes into account variables such as input, output, labor, production costs, and product selling prices. The basic formula for calculating value added according to (Hayami & Ruttan, 1987) is as follows:

Table 1. Calculation of Value-Added Analysis Using Hayami Method

No.	Variable	Formula
I	Output, Input and Prices	
1	Output (kg)	A
2	Input (kg)	B
3	Labor (Workdays / HOK)	C
4	Conversion Factor	D=A/B

5	Labor Coefficient (HOK/kg)	E=C/B
6	Output Price (Rp)	F
7	Labor Wage (Rp/HOK)	G
II	Revenue and Profit	
8	Raw Material Price (Rp/kg)	H
9	Contribution of Other Inputs (Rp/kg)	I
10	Output Value (Rp/kg)	J=DxF
11. a	Value Added (Rp/kg)	K=J-H-I
b	Value-Added Ratio (%)	L(%)=(K/J)x100%
12. a	Labor Income (Rp/kg)	M=ExG
b	Labor Share (%)	N(%)=(M/K)x100%
13. a	Entrepreneur's Profit (Rp/kg)	O=K-M
b	Profit Rate (%)	P(%)=(O/K)x100%
III	Return to Factors of Production	
14	Margin (Rp/kg)	Q=J-H
a	Labor Income Share (%)	R(%)=(M/Q)x100%
b	Other Input Contribution (%)	S(%)=(I/Q)x100%
c	Entrepreneur's Profit Share (%)	T(%)=(O/Q)x100%

2.3 Data Collection Techniques

Data were collected through interviews and direct observation at the business location. Interviews were conducted in a semi-structured manner with the owner of UMKM Hj. Mariyam to obtain information on raw material procurement, production processes, marketing systems, and financial aspects required for value-added analysis. Observations were made on daily production activities to ensure compliance between respondent statements and real field conditions.

2.4 Population and Sample

The population in this study includes all milkfish satay business actors in the Serang City area. The sample used was the Hj. Mariyam UMKM which was determined purposively by considering the following criteria: (1) actively producing and selling milkfish satay, (2) having run the business for at least 3 years, and (3) willing to provide information openly. The purposive sampling technique was chosen so that the data obtained was in-depth and relevant to the research objectives.

2.5. Validity and Reliability

To maintain data validity, the author compared the results of interviews and observations. In addition, data reliability was strengthened through a cross-check process with respondents regarding the data collected. The author also maintained consistency in measurements and observations during the research process to minimize subjective bias.

3. RESULTS AND DISCUSSION

3.1 Profile of the MSME Sate Bandeng Hj. Mariyam

Sate Bandeng Hj. Mariyam has been established since 1970 and holds a Household Food Industry Certificate (P-IRT No: 2.02.36.73.01.0131-19). This MSME is a successful example of local culinary business that has survived and developed for more than five decades. Hj. Mariyam was the founder of this traditional culinary venture in Serang City. She was formerly known as a cook in the Sultanate of Banten and became a pioneer in creating this processed milkfish product. Today, the business is managed by the third generation, namely the granddaughter of Hj. Mariyam. Although located in a small alley in Serang City, Sate Bandeng Hj. Mariyam is well-known not only in Serang but also in surrounding cities such as Cilegon and Pandeglang.

The daily sales of Sate Bandeng Hj. Mariyam reach an average of 250 boxes. On certain days, such as during the fasting month or festive celebrations, orders can double. The daily profit ranges from 1 to 2 million Rupiah. The uniqueness of Sate Bandeng Hj. Mariyam lies in the use of a traditional recipe without MSG, offering a savory flavor and soft texture. The product can last up to 24 hours at room temperature, one week in the refrigerator, and up to two weeks if frozen.

Sate Bandeng Hj. Mariyam is often chosen as a souvenir by domestic tourists visiting Serang City. By continuously preserving the traditions and quality passed down through generations, Sate Bandeng Hj. Mariyam remains an iconic culinary product of Serang. This culinary heritage not only offers a unique taste but also preserves local history and culture.

The Hj. Mariyam MSME was chosen as the case study in this research based on several considerations: It is an active MSME producing and selling milkfish satay in Serang City, Banten; It has been operating for a minimum of three years; It possesses a business license and is

recognized in the local market; It is directly involved in the production process, from raw material processing to marketing.

3.2 Industrial Management Analysis of MSME Sate Bandeng Hj. Mariyam

Management can be defined as the process of planning, organizing, directing, and controlling resources to achieve goals efficiently and effectively (Handoko, 2011). Industrial management in MSMEs plays a vital role in determining business efficiency, continuity, and competitiveness. Industrial management analysis can be divided into three main components:

3.2.1 Raw Material Procurement Management

Raw material procurement management refers to the planning, organizing, execution, and control of the process of acquiring raw materials required in production, considering quality, quantity, timing, and cost (Heizer & Render, 2014).

According to the Ministry of Industry (2021), raw material procurement is part of the supply chain system that determines the smoothness of production and the final product quality, especially for small and medium-sized enterprises.

The main raw material for the Sate Bandeng Hj. Mariyam MSME—milkfish—is ordered and purchased directly from local fish farmers around Serang. The price of live milkfish ranges from Rp 40,000 to Rp 45,000 per kilogram, with each kilogram containing 2–3 fish depending on their size. Additional ingredients such as coconut milk, spices, and other cooking seasonings are purchased at the main market in Serang City, namely Rau Market, which offers relatively lower prices than other local markets.

The procurement process here is still carried out daily and manually, without a documented inventory system, making it vulnerable to supply fluctuations. According to the Ministry of Marine Affairs and Fisheries (2020), the price of milkfish tends to fluctuate due to the following factors:

a. Fishing seasons
   Milkfish prices are generally lower during the harvest season and increase when supply is limited.
b. Weather and natural conditions
   Poor weather or flooding in fishponds can disrupt milkfish production, causing prices to spike.
c. Seasonal demand
   Increased demand during religious holidays, the fasting month, or vacation periods can drive up raw material prices.

To address the challenges of price fluctuation and improve business sustainability, the Sate Bandeng Hj. Mariyam MSME is advised to apply several strategies based on literature and SME business practices. First, the MSME may establish long-term partnerships with local fish farmers or fishermen to secure a more stable supply of milkfish with consistent quality (Ministry of Marine Affairs and Fisheries (2020). Second, a buffer stock strategy—buying in large quantities when prices are low and freezing the fish for later use—should be considered (Ministry of Marine Affairs and Fisheries (2020).

In addition, the MSME is advised to diversify its products, for example by developing milkfish presto or smoked milkfish variants, to keep operations running and reach a broader market even when raw material prices are high (Ministry of Marine Affairs and Fisheries, 2020). Lastly, cost control efforts should be made by improving efficiency in packaging, energy use, or labor, in order to reduce total production costs and maintain profit margins (Gaspersz, 2006). Implementing these strategies is expected to enhance the competitiveness of the Hj. Mariyam MSME while supporting its long-term sustainability.

3.2.2 Production Management

Operations management focuses on how to manage the production process to generate goods or services with optimal added value (Umar, 2008). According to the Ministry of Industry (2021), production management in small and medium industries involves the conversion of raw materials into final products through a series of stages such as preparation, processing, packaging, and quality control.

The production process of Sate Bandeng Hj. Mariyam is semi-traditional and relies on household labor. There are around 10 workers, each assigned tasks according to their expertise. The production process includes the following stages: Cleaning and deboning; Spice preparation; Mixing fish meat with spices; Refilling the mixture into the milkfish skin; Grilling and packaging.

This process requires high-level skills, particularly in deboning the fish without damaging the skin. Unfortunately, these skills are not documented in the form of standard operating procedures (SOPs) and are mostly passed down through generations, resulting in inconsistency in product quality. According toSari & Yuliana (2019), many MSMEs producing regional specialties face

challenges in the production process, such as limited production equipment, supply issues, and undertrained labor.

3.2.3 Marketing Management

Marketing management is a managerial function that involves analyzing markets, formulating strategies, setting prices, promoting products, and building sustainable relationships with consumers (Swastha, 2005).

At the Sate Bandeng Hj. Mariyam MSME, product marketing is carried out through several methods, including:

a. Direct sales to consumers through an outlet located at the owner's home. The advantage of buying directly here is that customers can choose milkfish satay that is still warm.
b. Sales through resellers or souvenir vendors specializing in Serang's regional products. These vendors are typically found along roadside stalls near highway exits. The selling price of milkfish satay from these vendors is slightly higher than the price at the home outlet.
c. Promotion through social media, although this remains limited. When it does occur, the promotion is typically not carried out by the owner herself, but rather by influencers or content creators who have visited Serang and purchased souvenirs there. Usually, they feature the product while creating culinary content.

In general, marketing strategies that involve promotion are still minimal, and most rely on word-of-mouth marketing, customer loyalty, and participation in local exhibition events. Only a few milkfish satay MSME actors in the area utilize digital platforms such as WhatsApp, Facebook, or Instagram for promotion.

Labeling, packaging, and branding remain very basic and do not yet reflect the potential of this regional specialty product. Moreover, business actors often face challenges in expanding their distribution networks due to limited access to capital and market information. According to Kurniawati (2020), supply chain management for MSMEs in fishery products must include raw material planning, production, distribution, and quality control to ensure competitiveness.

3.3 Value-Added Analysis of the Hj. Mariyam Milkfish Satay Product

Value-added analysis is an approach used to measure the contribution of the processing stage to the economic enhancement of a product. This analysis is conducted to determine how much value the processing stage contributes to the economic value of the milkfish satay product. The calculation is based on the Hayami method, which takes into account variables such as input, output, labor, production costs, and selling price.

The factors influencing value added in the processing system consist of technical and non-technical factors. Technical factors include product quality, technology implementation, production capacity, labor utilization, raw material quantity, and supporting inputs. These affect the product's selling price. Meanwhile, non-technical (market) factors include output price, labor wages, raw material costs, market information, technological investment capital, and the value of other inputs. Non-technical factors can influence the conversion factor (the amount of product generated from a unit of raw material) and production costs (Hayami & Ruttan, 1987).

The detailed results of the value-added analysis for the Hj. Mariyam MSME can be seen in Table 2 below.

Table 2. Calculation of the Added Value of Hj. Mariyam's Bandeng Satay Products

No.	Variable	Formula	Value
I	Output, Input and Prices		
1	Output (kg)	A	90
2	Input (kg)	B	100
3	Labor (Workdays / HOK)	C	10
4	Conversion Factor	D=A/B	0,90
5	Labor Coefficient (HOK/kg)	E=C/B	0,10
6	Output Price (Rp)	F	80.000
7	Labor Wage (Rp/HOK)	G	60.000
II	Revenue and Profit		
8	Raw Material Price (Rp/kg)	H	40.000
9	Contribution of Other Inputs (Rp/kg)	I	10.000
10	Output Value (Rp/kg)	J=DxF	72.000
11 a	Value Added (Rp/kg)	K=J-H-I	22.000
b	Value-Added Ratio (%)	L(%)=(K/J)x100%	30,56
12 a	Labor Income (Rp/kg)	M=ExG	6.000
b	Labor Share (%)	N(%)=(M/K)x100%	27,27
13 a	Entrepreneur's Profit (Rp/kg)	O=K-M	16.000
b	Profit Rate (%)	P(%)=(O/K)x100%	72,73
III	Return to Factors of Production		
14	Margin (Rp/kg)	Q=J-H	32.000

a	Labor Income Share (%)	R(%)=(M/Q)x100%	18,75
b	Other Input Contribution (%)	S(%)=(I/Q)x100%	31,25
c	Entrepreneur's Profit Share (%)	T(%)=(O/Q)x100%	50

Based on the calculation results, it was found that from every 1 kilogram of raw milkfish material, approximately 0.9 kilograms of ready-to-sell milkfish satay product is produced (with a conversion factor of 0.9). This indicates that the processing is fairly efficient, with a relatively low level of raw material loss. The selling price of milkfish satay is Rp 80,000 per kilogram, so the output value from 1 kilogram of raw material is Rp 72,000 (conversion factor multiplied by selling price).

From this data, a value added of Rp 22,000 per kilogram is obtained, which is the difference between output value and total input (raw material and other inputs). This figure reflects the economic contribution of the processing carried out by the MSME actor. The value-added ratio of 30.56% for the Hj. Mariyam milkfish satay indicates that this business provides a relatively high economic contribution compared to the average value added of traditional food MSMEs in Indonesia. According to reports by the Ministry of Industry (2021) and studies from the Center for Agroindustry (2018), the average value-added ratio of traditional food MSMEs ranges between 15% and 25%. The value added achieved by the Hj. Mariyam MSME approaches the category of enterprises that are beginning to modernize in terms of processing and marketing, although the production technology used is still relatively simple. This suggests a strong potential for further development to improve the competitiveness of the business.

The results of the analysis of the added value of Hj. Mariyam's MSMEs are in line with the findings of Putri (2021), which shows that the processing of fish products by MSMEs in the coastal areas of Central Java is able to produce added value of 25-30% per kg of raw materials if supported by efficient production management. In addition, a study by Saptana and Effendi (2004) also confirmed that household agro-industries that adopt a systematic value-added approach can increase business income by up to 35% of the output value. Furthermore, Kurniawati (2020) in her research on the supply chain of fishery product MSMEs, stated that the success of increasing added value is greatly influenced by the stability of raw materials and the integration of the production-marketing process. When compared with the results of Hj. Mariyam's MSMEs which obtained a value-added ratio of 30.56%, it can be concluded that the performance of this business is already in the efficient category, and has prospects for further improvement through strengthening supply chain management and product diversification.

Of the total value added, Rp 6,000 (27.27%) is allocated for labor wages, while the remaining Rp 16,000 (72.73%) becomes net profit for the business owner. This shows that the enterprise remains labor-intensive. According to the Banten Province Statistic Agency (2023), a labor-intensive business is one that relies more on human labor than capital or technology in its operations. Meanwhile, according to Sukirno (2006), labor-intensive industries are those in which production processes rely more heavily on human labor than on machines or modern equipment. The implementation of labor-intensive approaches can serve as a solution to ensure business sustainability while also absorbing more local labor in MSMEs (Ministry of Manpower, 2021).

Margin analysis shows that the difference between output value and raw material cost is distributed as follows: 18.75% for labor wages, 31.25% for additional input costs, and 50% as net profit for the entrepreneur. This margin distribution illustrates that the milkfish satay business provides economic benefits to both workers and business owners, while also reflecting a balanced allocation of resources in micro-scale food processing enterprises.

4. CONCLUSION

Based on research results on the MSME Sate Bandeng Hj. Mariyam in Serang City, Banten, it can be concluded that this business has a simple yet functional industrial management in every aspect, from raw material procurement, production, to marketing. In the raw material procurement aspect, this MSME uses fresh bandeng fish as the main ingredient, with an average price of IDR 40,000 per kg. However, this business still faces risks of raw material price fluctuations due to seasonal factors and demand, thus it requires partnership strategies with suppliers or stock purchases when prices are low to anticipate cost spikes. In production management, the processing is done traditionally and manually, making this business labor-intensive, involving 10 workers per day (10 HOK), with an average wage of IDR 60,000 per HOK. The production productivity reaches 90 kg of ready-to-sell bandeng satay from every 100 kg of raw material (conversion factor 0.9). Meanwhile, in marketing management, the product sold at a price of Rp 80,000 per kg or around Rp 40,000 per piece in a box, with marketing still dominated by direct sales and local souvenirs. The analysis of added value using the Hayami method shows that each

1 kg of raw milkfish produces an output value of Rp 72,000, with an added value of Rp 22,000 per kg or equivalent to 30.56% of the output value. This added value is higher than the average standard for traditional food SMEs in Indonesia, which ranges from 15% to 25%. From this added value, Rp 6,000 (27.27%) is allocated for labor wages, while Rp 16,000 (72.73%) becomes the net profit of the business. In the future, this business has great potential for development through the application of sustainability principles, such as waste management and long-term partnerships with local farmers. In addition, the use of digital innovations such as marketing through social media, e-commerce platforms, or online ordering systems can expand market reach and increase product competitiveness more significantly. It is recommended that MSME Sate Bandeng Hj. Mariyam strengthen partnerships with raw material suppliers are necessary to mitigate the impact of fluctuations in the price of milkfish. Furthermore, this business should start adopting simple production technologies to enhance efficiency without compromising jobs. Product and packaging diversification, along with strengthening digital marketing, will open up broader market opportunities and increase added value for the business. Lastly, the implementation of a simple financial recording system will help manage the business in a more professional and sustainable manner.

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REFERENCES

Agency, B. P. S. (2023). *Statistics of MSMEs and processing industries in Banten Province*.
City, D. of I. and T. of S. (2010). *Profile of small and medium industries in Serang City*.
Gaspersz, V. (2006). *Production management*. Gramedia.
Handoko, T. H. (2011). *Management*. BPFE-Yogyakarta.
Hayami, Y., & Ruttan, V. W. (1987). *Agricultural development: An international perspective*. The Johns Hopkins University Press.
Heizer, J., & Render, B. (2014). *Operations management* (11th ed.). Pearson Education.
Indonesia, M. of C. and Msme. of the R. of. (2020). *Profile of MSMEs in Indonesia*. Deputy for Production and Marketing.
Indonesia, M. of I. of the R. of. (2021). *Guidelines for food MSME management*. Directorate General of Agro Industry.
Indonesia, M. of M. A. and F. of the R. of. (2020). *Study on the national fisheries supply chain*. Directorate General of Capture Fisheries.
Indonesia, M. of M. of the R. of. (2021). *Guidelines for implementing the labor-intensive program*. Directorate General of Job Placement and Employment Expansion. https://kemnaker.go.id
Industry, C. for A.-B. (2018). *Study on value-added of processed food products by MSMEs*. Ministry of Industry of the Republic of Indonesia.
Kurniawati, R. (2020). Supply chain management in small and medium enterprises in fishery products. *Jurnal Agroindustri*, *6*(1), 25–33.
Province, D. of M. A. and F. of B. (2022). *Annual report on the fish processing industry*.
Putri, R. D. (2021). Value-added analysis of processed fishery products in MSMEs. *Jurnal Agroindustri Indonesia*, *9*(2), 115–122.
Saptana, & Effendi, E. (2004). Value-added analysis of household-scale agroindustry. *Jurnal Agro Ekonomi*, *22*(2), 97–120.
Sari, D. P., & Yuliana, N. (2019). Production process analysis of MSMEs in regional specialty foods. *Jurnal Teknologi Dan Manajemen Agroindustri*, *8*(2), 118–127.
Sugiyono. (2017). *Qualitative, quantitative, and R&D research methods*. Alfabeta.
Sukirno, S. (2006). *Introduction to microeconomic theory* (3rd ed.). Rajawali Pers.
Swastha, B. (2005). *Modern marketing management*. Liberty.
Tambunan, T. T. H. (2019). *Micro, small and medium enterprises in Indonesia: Key issues*. LP3ES.
Umar, H. (2008). *Operations management*. Gramedia.
Wulandari, W. (2012). *Profitability analysis of milkfish satay MSMEs in Serang City*.