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FEASIBILITY ANALYSIS AND DEVELOPMENT STRATEGY OF SMOKED CATFISH BUSINESS FOR MSMES IN BANDAR LAMPUNG CITY

ANALISIS KELAYAKAN DAN STRATEGI PENGEMBANGAN USAHA IKAN LELE ASAP PADA UMKM DI KOTA BANDAR LAMPUNG

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ABSTRACT

Catfish is the most widely cultivated freshwater fish in Lampung Province, thus having great potential as a raw material for processing businesses, utilized by the Mina Nusantara MSMEs (micro, small, and medium enterprises) in Bandar Lampung City, as the region with the highest GDP (gross domestic product per capita) contribution from the processing industry sector. Mina Nusantara MSMEs still face limitations in business management, capital, marketing, and development strategies. This study aims to analyze business feasibility and formulate a development strategy for the Mina Nusantara smoked catfish business. The business feasibility analysis used net present value (NPV), internal rate of return (IRR), net benefit-to-cost (B/C) ratio, gross benefit-to-cost (B/C) ratio, and payback period (PP). The development strategy was carried out through an analysis of internal and external factors using the IFE and EFE matrices, by mapping the business position in the IFE matrix, formulating strategies using SWOT, and determining strategic priorities using QSPM. The results of the feasibility analysis indicate that the Mina Nusantara smoked catfish business is viable for continued operation and expansion. The feasibility analysis yielded an NPV of 294,327,358 IDR, an IRR of 58.75%, a gross B/C ratio of 1.22, a net B/C ratio of 2.85, and a payback period of one year and five months. The most effective implementation of Mina Nusantara's business development strategy is to strengthen accounting and administrative systems and to develop human resource capabilities and digital technology to support access to financing, improve business performance, strengthen collaboration, and expand the supplier network.

Keywords: business feasibility, development strategy, fish processing MSMEs, smoked catfish

ABSTRAK

Lele merupakan ikan air tawar yang paling banyak dibudidayakan di Provinsi Lampung sehingga berpotensi besar sebagai bahan baku usaha pengolahan yang dimanfaatkan oleh UMKM (usaha mikro, kecil, dan menengah) Mina Nusantara di Kota Bandar Lampung sebagai daerah dengan kontribusi PDRB (produk domestik regional bruto) tertinggi dari sektor industri pengolahan. UMKM Mina Nusantara masih menghadapi keterbatasan dalam pengelolaan usaha, permodalan, pemasaran, dan strategi pengembangan. Penelitian ini bertujuan untuk menganalisis kelayakan usaha dan merumuskan strategi pengembangan usaha ikan lele asap Mina Nusantara. Metode analisis kelayakan usaha menggunakan perhitungan *net present value* (NPV), *internal rate of return* (IRR), *net benefit cost* (B/C) *ratio*, *gross benefit cost* (B/C) *ratio*, dan *payback period* (PP). Strategi pengembangan dilakukan melalui analisis faktor internal dan eksternal menggunakan matriks IFE dan EFE, dilanjutkan dengan pemetaan posisi usaha melalui matriks IE, perumusan strategi dengan SWOT, serta penentuan prioritas strategi menggunakan QSPM. Hasil analisis kelayakan menunjukkan usaha ikan lele asap Mina Nusantara layak untuk dilanjutkan dan dikembangkan. Hasil analisis kelayakan usaha menghasilkan nilai NPV Rp294.327.358, IRR 58,75%, *gross* B/C *ratio* 1,22, *net* B/C *ratio* 2,85, dan *payback period* selama satu tahun lima bulan. Implementasi strategi pengembangan usaha Mina Nusantara yang paling efektif adalah memperkuat sistem pembukuan dan administrasi serta mengembangkan kemampuan SDM (sumber daya manusia) dalam pemanfaatan teknologi digital untuk mendukung akses pembiayaan dan meningkatkan kinerja usaha, memperkuat kerja sama serta memperluas jaringan pemasok.

Kata kunci: ikan lele asap, kelayakan usaha, strategi pengembangan, UMKM pengolahan ikan

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INTRODUCTION

Catfish is the most widely cultivated freshwater fish species in Lampung Province over the past five years, from 2019 to 2023 (BPS Lampung Province 2025). Catfish production increased from 2019 to 2022 with an average annual increase of 3.54% and decreased by 5.79% in 2023. Fish production in Lampung Province in 2023 declined, including catfish, due to the impact of El Niño, which resulted in drought in water sources (DKP Lampung Province 2025). In 2023, the volume of catfish production in Lampung Province was 34,589.84 tons. This large amount of the catfish production makes Lampung Province have great potential for developing processing businesses using catfish as raw material.

The opportunity to develop a catfish processing business is being exploited by one of the micro, small, and medium enterprises (MSMEs) in Bandar Lampung City. Bandar Lampung City is the only region in Lampung Province with the largest contribution to the gross regional domestic product (GRDP) from the processing industry sector, particularly the food and beverage industry (BPS Lampung Province 2025). This condition indicates that the economic structure of Bandar Lampung City strongly supports the development of business activities in the food processing sector, including fishery product processing. The processing industry plays a vital role in the economy, as it is the main absorber of raw materials and job creator in Bandar Lampung City (BPS Bandar Lampung City 2025).

Mina Nusantara is a collective business categorized as an MSME engaged in the micro-small-scale smoked catfish processing industry, utilizing local resource opportunities. Processing industries that utilize local resources will revitalize the economy of the surrounding community (Marwan *et al.* 2013). Businesses run as a group are not only determined by individual entrepreneurial activity but are also strongly influenced by the ability to work collectively (Lindawati 2014). Group businesses have advantages over businesses run individually, including the ability of group members to provide one another with input to solve problems (Sarjiyanto 2017). Businesses run as a group aim to improve the welfare of all group members (Yuniarti *et al.* 2020).

Mina Nusantara sources its catfish raw materials from Pringsewu Regency and East Lampung to meet its production needs. Demand for smoked catfish products continues to increase and is sometimes unmet. This is due to limited raw material availability, as the cooperation system with suppliers has not been optimally managed, resulting in a consistent supply of catfish. Despite significant market potential, strategic production locations, and the availability of raw materials at the provincial level, the sustainability and development of Mina Nusantara's business require an in-depth study. Therefore, a business feasibility analysis is crucial to assess the sustainability of Mina Nusantara's smoked catfish processing business. Furthermore, combining the feasibility analysis with the formulation of a business development strategy is necessary to identify appropriate strategic steps to address internal and external challenges, thereby enabling Mina Nusantara to strengthen its position amid competition and an ever-changing business environment. This study aims to analyze the business feasibility and formulate development strategies for the smoked catfish business at Mina Nusantara MSMEs in Bandar Lampung City.

METHODS

The research was conducted at Mina Nusantara MSME, located at Jl. Mawar No. 10, Labuhan Dalam Village, Tanjung Senang District, Bandar Lampung City. The research was conducted from September to November 2025. Respondents in this study were selected by purposive sampling. There were four respondents: the head of Mina Nusantara MSME; two members who had joined since Mina Nusantara's establishment and therefore knew its conditions well; and an extension worker who had been guiding Mina Nusantara to date. The data used for the business feasibility analysis was obtained from interviews with the head of Mina Nusantara. The level of feasibility was assessed from a financial perspective using the net present value (NPV) method, the internal rate of return (IRR), the gross benefit-cost (gross B/C) ratio, the net benefit-cost (net B/C) ratio, and the payback period (PP).

Net present value (NPV)

Net present value (NPV) is the difference between benefits and costs calculated at a given interest rate (Ibrahim 2003). The formula for calculating NPV is as follows:

$$NPV = \sum_{t=1}^{n} \frac{bt - ct}{(1+i)^t} - ko$$

Description:
NPV = Net present value

bt = Benefit/net income for the year t (IDR)
ct = Cost/costs in the year t (IDR)
I = Interest rate (%)
n = Economic life of the project (Year)
Decision-making criteria:
- NPV value > 0, the project is feasible to implement.
- NPV value < 0, the project is not feasible to implement.
- NPV value = 0, the project is at the break-even point (BEP).

Internal rate of return (IRR)

The internal rate of return (IRR) is an interest rate that indicates the net present value (NPV) is equal to the total investment costs of a project. IRR analysis will determine the interest rate at which the NPV will be zero. Based on experimental results, the IRR value lies between a positive NPV and a negative NPV, namely when the NPV is equal to zero (Ibrahim 2003). Mathematically, the IRR can be formulated as follows:

$$IRR = i^{+} + \left[\frac{NPV^{+}}{NPV^{+} - NPV^{-}}\right](i^{-} - i^{+})$$

Description:
IRR = Internal rate of return
NPV^{+} = Positive NPV (IDR)
NPV^{-} = Negative NPV (IDR)
i^{+} = Interest rate at positive NPV (%)
i^{-} = Interest rate at negative NPV (%)
Decision-making criteria:
- If the IRR value > i, the project is declared feasible to be undertaken.
- If the IRR value < i, the project is declared not feasible to be undertaken.
- If the IRR value = i, the project is at the break-even point (BEP).

Net benefit cost ratio

The net B/C ratio is the comparison between the present value of revenue and the present value of costs (Ibrahim 2003). The formula used is as follows:

$$Net\ B/C\ Ratio = \frac{\sum_{t=1}^{n} \frac{Bt - Ct}{(1-i)^{t}}}{\sum_{t=1}^{n} \frac{Ct - Bt}{(1+i)^{t}}}$$

Description:
Bt = Income (benefit) in the year-t (IDR)
Ct = Costs in the year-t (IDR)
i = discount factor (%)
n = project age (year)
Eligibility criteria:
- If net B/C > 1, the project is feasible.
- If net B/C < 1, the project is not feasible to implement, gross benefit cost ratio (gross B/C ratio).

Gross B/C ratio is the comparison between the income or benefits from an investment and the costs incurred (Ibrahim 2003). The formula used is:

$$Gross\ B/C\ Ratio = \frac{\sum_{t=1}^{n} Bt(1+r)^{n}}{\sum_{t=1}^{n} Ct(1+r)^{n}}$$

Description:
Bt = Benefit in the year-t (IDR)
Ct = Costs in the year-t (IDR)
i = Discount factor (%)
n = Project age (tahun)
Assessment criteria:
- If the gross B/C ratio > 1, the project is feasible.
- If the gross B/C ratio < 1, the project is not feasible.
- If the gross B/C ratio = 1, the project is at the break-even point.

Payback period (PP)

Payback period (PP) is the ratio of profit and cost to the present value (Ibrahim 2003). The equation for calculating PP is as follows:

$$PP = \frac{Investation\ Value}{Net\ Cash\ Inflow} \times 1\ year$$

The business development analysis was conducted using Mina Nusantara's internal and external data that influence the sustainability and development of the smoked catfish business. The data employed in this study were acquired through the systematic process of discerning both internal and external strategic variables. Identification and evaluation of Mina Nusantara's internal and external environments were conducted through direct interviews with four respondents, using purposive sampling and a questionnaire, accompanied by field observations and literature studies. External data were obtained as comparative data from the environment outside Mina Nusantara, describing factors that have the potential to influence organizational performance. Furthermore, the data were analyzed to formulate Mina Nusantara's business development strategy through internal factor evaluation (IFE), external factor evaluation (EFE), internal-external (IE), strengths, weaknesses, opportunities, and threats (SWOT) analysis, and a quantitative strategic planning

matrix (QSPM).

The company requires three stages in determining its business strategy, using several matrices for analysis (David 2011). The first stage is data collection (internal and external factor evaluation); the second stage is analysis (internal-external matrix and SWOT matrix); and the third stage is decision-making (quantitative strategic planning matrix). The IFE and EFE matrices were used to evaluate Mina Nusantara's internal and external environmental conditions and identify the business's strengths, weaknesses, opportunities, and threats. The weighting process was carried out based on the results of the respondent questionnaire, using a weight formula that equals the number of respondents' answers on a factor divided by the total of all respondents' answers, so that a proportional value was obtained with a total weighting of 1. The ranking (rating) was also calculated as the average of respondents' answers using a rating formula that divides the number of respondents' answers by the number of respondents, with a scale of 1–4 indicating the level of strength, weakness, opportunity, or threat. The score was obtained by multiplying the weight and rating, then all scores were added to obtain the total IFE and EFE scores. The total score was mapped in the IE Matrix to determine the company's strategic position.

A SWOT analysis was used to formulate business development strategies by identifying and evaluating internal and external factors. This approach emphasized optimizing a business's strengths and opportunities while simultaneously mitigating its weaknesses and threats. The results of a SWOT analysis produce several alternative strategies, which then serve as the basis for determining the most appropriate business development strategy (Rangkuti 2021). The final stage of business development analysis was carried out using the quantitative strategic planning matrix (QSPM). This method was used to determine the most appropriate strategic priorities by evaluating the relative attractiveness of each formulated strategic alternative. The assessment in the QSPM is based on the key internal and external success factors identified in the previous stage. Each strategic alternative is evaluated based on its level of attractiveness relative to these factors, allowing for a more objective and systematic determination of strategic priorities. The selected strategy is expected to provide an optimal contribution to supporting business development effectively, purposefully, and sustainably through the established approach.

RESULTS AND DISCUSSION

Mina Nusantara is a collective of micro, small, and medium-sized enterprises (MSMEs) that processes and markets smoked catfish. Established on August 18, 2018, Mina Nusantara currently has 15 members. Smoked catfish production and marketing began in 2019. The production location and marketing are at Jl. Mawar No. 10, Labuhan Dalam Village, Tanjung Senang District, Bandar Lampung City. Mina Nusantara is committed to consistently producing halal products, including consistency in the use and procurement of raw materials, additives, and auxiliary materials, as well as consistency in the halal production process in accordance with the Assessment Institute for Foods, Drugs, and Cosmetics (LPPOM) halal certification requirements.

Mina Nusantara empowers housewives through catfish processing, the freshwater fishery commodity with the highest production in Lampung Province. Utilizing local resources aims to increase the value of catfish while also helping to strengthen the economic well-being of Mina Nusantara members' families and the local community. Utilizing local fishery resources can increase the added value of commodities, create business opportunities, and directly impact the income and well-being of households and the surrounding community. This has been done by the Joint Business Group (KUBE) "Rezeki" in Pengujan Village, Bintan Regency, which utilizes the abundant marine fish on the Bintan Coast by processing fish floss and fish "tekwan" (a mixture of fish meat and tapioca, formed into a small ball) to improve the welfare of KUBE Rezeki fisherwomen (Paramita *et al.* 2025).

Smoked catfish production process

Mina Nusantara produces smoked catfish on average twice a week. The raw catfish were sourced from fish farmers in Pringsewu Regency and East Lampung Regency. The smoked catfish production process began with selecting fresh catfish, followed by gutting and filleting the fish. The fish were then thoroughly washed and drained. The cleaned fish are arranged on racks and then cold-smoked at a temperature of around 40–50 °C for 1–2 hours. The fish are then placed in an oven for hot smoking at a temperature of 60–80 °C (for 3–6 hours), until cooked and completely dry. After being removed from the smoker, the fish are cooled and then packaged before being marketed.

Business feasibility analysis

A business feasibility analysis was conducted to obtain an overview of whether the business being studied is feasible or not to run, because the basic goal of the business is to make a profit. Mina Nusantara carries out production activities on average twice a week. The raw material for catfish is obtained from fish farmers in Pringsewu Regency and East Lampung Regency. Investment costs are costs to meet the initial needs of the smoked catfish business, which include building costs and equipment needed for production. The investment cost for the Mina Nusantara smoked catfish business is IDR 158,380,000. The total production cost of the smoked catfish business in 2024 is IDR 508,669,200. These production costs consist of fixed costs and variable costs. Fixed costs are routine costs incurred annually, such as land rental costs, equipment depreciation, and maintenance of production equipment. The fixed cost of the smoked catfish business is IDR 15,185,000. Variable costs in 2024 are IDR 493,484,200. Mina Nusantara's total smoked catfish production in 2024 was 5,218 kg. Smoked catfish were only sold in 250g packages for 35,000 IDR per piece. Total revenue in 2024 was 730,520,000 IDR. Income or profit from the smoked catfish business in 2024 was 221,850,800 IDR. Cash flow analysis of the smoked catfish business includes cash inflows (receipts) and cash outflows (expenses). The cash flow used was from the initial investment in 2018, starting production in 2019, until 2024. This business feasibility analysis used NPV, IRR, net B/C ratio, gross B/C ratio, and PP indicators.

The Mina Nusantara smoked catfish business in Table 1 shows that the NPV value is IDR 294,327,358. An NPV value greater than zero means the smoked catfish business is feasible to continue and develop. The obtained IRR value of 58.75% is greater than the 15% interest rate, so the smoked catfish investment is feasible to continue. If the investment is carried out commercially using an interest rate of 58.75%, the smoked catfish business is still feasible to continue. The PP value of 1.4 indicates that the payback period, or the long period for the return on investment, is 1 year and 5 months. The return on investment can be stated to be fast because the payback period is less than five years (Palupi *et al.* 2021). The gross B/C ratio of 1.22 and the Net B/C Ratio of 2.85 have a value > 1, meaning that cash inflows are greater than cash outflows. A gross (B/C) ratio of 1.22 means that every rupiah of costs incurred generates revenue of 1.22 IDR. A net B/C ratio of 2.85 means the business generates significant net profits, generating 2.85 IDR in profits for every rupiah of costs incurred. Both B/C ratios greater than one indicate that the smoked catfish processing business is financially viable and worth continuing for 10 years.

The Mina Nusantara smoked catfish business is considered financially viable, in line with research conducted by Anam *et al.* (2022) that found that a financially viable fish smoking industry has strong economic prospects and can be used as a basis for investment decisions and the development of sustainable fisheries-based businesses. A business with proper production management will provide significant economic benefits and is worthy of development as a sustainable fisheries business model (Witoko *et al.* 2018).

Business development strategy

Formulating a strategy for developing the smoked catfish business at Mina Nusantara involves several stages. First, identifying internal and external factors influencing development; second, developing a development strategy; and third, determining the best and most appropriate strategy.

Analysis of IFE and EFE matrices

Internal and external factors influencing business development were analyzed using the IFE and EFE matrices. These matrices were used to evaluate internal and external conditions that act as supporting and inhibiting factors in the development of the smoked catfish business. The results of the analysis of internal and external factors for the Mina Nusantara smoked catfish business are presented in Tables 2 and 3.

The greatest strength of the Mina Nusantara smoked catfish business is its human resources, who possess expertise in smoking techniques. This indicates that the technical capabilities of human resources are a key factor in maintaining the quality of smoked catfish and supporting the sustainability of the production process. This is in line with França *et al.* (2025), who stated that managerial factors, particularly the experience and quality of human resources, have a more dominant influence on business success than the physical characteristics or scale of the business. Other significant strengths include the ownership of a smoking oven and a loyal customer base. These two factors demonstrate high production efficiency and established market stability.

Mina Nusantara's greatest weakness lies in inadequate administration, which makes it difficult to access financing while also facing a lack of capital. The challenges encountered are very dominant in almost all MSME sectors in Indonesia, one of which is limited capital and limited access to capital in running their businesses (Swangsa *et al.* 2025).

Table 3 shows that Mina Nusantara has the highest potential for obtaining permits. These permits include a Business Identification Number (NIB), halal certification, a Home Industry Processed Food Production Commitment Fulfillment Certificate (SPP-IRT), approval for the use of the SNI (Indonesian National Standard) mark, and a processing feasibility certificate. Business legality is a key opportunity, boosting market confidence and opening access to a broader market. Business licensing is a crucial supporting factor in ensuring product quality, expanding market access, increasing competitiveness, and ensuring the sustainability of MSME-based fishery processing businesses (Alvionita *et al.* 2022). The urban location of smoked catfish production also presents an opportunity, facilitating access to consumers and marketing. The biggest threat is the lack of written agreements with suppliers, resulting in an unstable catfish supply. Relationships with suppliers have been informal and based on trust and collaborative practices. This situation has led to suppliers, particularly catfish farmers, potentially selling their harvest to third parties without notification, which in some cases has resulted in unmet raw catfish supply despite prior orders.

Table 1. Results of the financial feasibility analysis of the Mina Nusantara smoked catfish processing business.

No	Business Feasibility Parameters	Values	Eligibilities
1	NPV (IDR)	294,327,358	NPV > 0 (feasible)
2	IRR (%)	58.75	IRR > 15% (feasible)
3	Gross B/C rasio	1.22	Gross B/C ratio > 1 (feasible)
4	Net B/C rasio	2.85	Net B/C ratio > 1 (feasible)
5	PP	1.4	1 year 5 months

Table 2. Results of the analysis of internal strategic factors (IFE Matrix) in the Mina Nusantara smoked catfish business.

No	Internal Strategic Factors	Weights	Ratings	Scores
Strengths				
1	The group has a permanent production location that supports the routine smoking process.	0.109	3.250	0.355
2	Has a smoking oven to increase efficiency and hygiene.	0.118	3.500	0.412
3	Human resources has expertise in smoking techniques.	0.126	3.750	0.473
4	Have regular customers.	0.118	3.500	0.412
5	Have adequate production facilities and infrastructure.	0.109	3.250	0.355
6	Using fresh and uniform catfish to maintain quality.	0.101	3.000	0.303
Weaknesses				
1	Packaging is still simple.	0.042	1.250	0.053
2	Administration is inadequate, making it difficult to access financing.	0.067	2.000	0.134
3	Lack of capital to expand the business.	0.067	2,000	0.134
4	Product diversification is not yet possible.	0.050	1.500	0.076
5	Digital marketing is not yet optimal.	0.034	1.000	0.034
6	Human resources are predominantly aged over 40 years and are less adaptable to digital technology.	0.059	1.750	0.103
Total (Internal Strategic Factors)				**2.842**

Table 3. Results of external strategic factor analysis (EFE Matrix) on the Mina Nusantara smoked catfish business.

No	Eksternal Strategic Factors	Weights	Ratings	Scores
Opportunities				
1	Large raw material potential due to high catfish production in Lampung Province.	0.109	3.000	0.327
2	Production locations in cities facilitate access to consumers and marketing.	0.118	3.250	0.384
3	Complete permits (NIB-Business Identification Number, "halal", SPP-IRT -Household Industry Food Production Certificate), SNI-Indonesian National Standard, and processing feasibility certificates increase market confidence.	0.127	3.500	0.445
4	Continuously increasing demand for smoked fish.	0.109	3.000	0.327
5	Availability of government and non-government financing programs.	0.109	3.000	0.327
6	Availability of substitute fish when catfish are scarce.	0.109	3.000	0.327
7	Government programs (training, equipment assistance, and marketing enhancement).	0.091	2.500	0.227
8	Opportunities for using digital technology.	0.091	2.500	0.227
Threats				
1	There is no written agreement with suppliers, so the catfish supply is sometimes unstable.	0.055	1.500	0.082
2	Transportation costs arise because raw materials are located in different districts.	0.045	1.250	0.057
3	Digital marketing is not yet optimally utilized.	0.036	1.000	0.036
	Total (External Strategic Factors)			**2.768**

IE Matrix analysis

The IE matrix combines the weighted scores of the IFE matrix of 2.842 and the EFE matrix of 2.768, resulting in the Mina Nusantara smoked catfish business being placed in cell V of the IE matrix, indicating it is in a growth or stability strategy. Figure 1 shows that the internal strength of the Mina Nusantara smoked catfish business is slightly above average, while external opportunities are also in the moderate category. This condition indicates that Mina Nusantara has sufficient internal capabilities to carry out operational activities, but is not yet strong enough to undertake aggressive business expansion. The recommended strategy is a stability strategy, namely maintaining the business while strengthening internal foundations through diversification with raw material substitution, improving business management and administration, and strengthening marketing, especially through digital marketing.

Mina Nusantara is not yet advised to increase production significantly. This is due to several internal limitations, such as a lack of capital, limited access to financing, inadequate business administration, suboptimal digital marketing, and human resource capacity that is less adaptable to digital technology. Increasing production too rapidly risks creating an imbalance between production capacity, marketing capabilities, and raw material availability. Conversely, product diversification using readily available substitute fish raw materials on a limited and gradual scale is more relevant for Mina Nusantara. Mina Nusantara can also improve its packaging to make it more attractive and use vacuum packaging to maintain product quality. This recommended strategy is expected to gradually increase the competitiveness of Mina Nusantara's smoked catfish business and open up opportunities for growth strategies at a later stage.

SWOT matrix analysis

The SWOT matrix was used to formulate a strategy based on identified internal and external factors of the Mina Nusantara smoked catfish business. The strategy formulation is shown in Table 4, with a combination of factors including SO, ST, WO, and WT strategies. The development strategy focuses on increasing production capacity and expanding marketing to capitalize on the high demand and support from raw materials and production facilities. This strategy is reinforced through

improved packaging, product diversification, increased human resource capacity in utilizing digital technology, strengthened supplier collaboration, and improved administration and bookkeeping systems to support capital and business sustainability.

QSPM matrix analysis

The QSPM technique is designed to objectively assess the attractiveness and evaluate feasible alternative strategies based on the internal and external success factors identified in the IE matrix and SWOT matrix. The QSPM is the final stage in the strategy formulation analysis framework; it clearly identifies the most appropriate alternative strategies (Purwanto 2007). At this stage, the results of the previous analysis are summarized into several alternative strategies for the Mina Nusantara smoked catfish business.

Based on the QSPM matrix results, the top-ranked strategy is strengthening accounting and administration systems and developing human resource capabilities in utilizing digital technology to support access to financing and improve business performance. Nazaruddin *et al.* (2024) stated that small and medium enterprises in developing countries, including Indonesia, need to be strengthened with digital literacy, digital platforms, and information management. Sinaga *et al.* (2023) emphasized the importance of business digitalization strategies as a key driver of improving MSME performance. Digitalizing financial literacy makes it easier for MSMEs to understand financial management, access financing, and prepare financial and investment reports (Millaningtyas *et al.* 2024). Meanwhile, MSMEs must also be able to combine digital readiness and increased financial literacy (Hadi *et al.* 2025). Therefore, this strategy is a critical priority in strengthening capital, increasing competitiveness, and supporting the sustainable development of Mina Nusantara businesses.

The importance of maintaining a stable supply of raw materials to support sustainable production makes the strategy of strengthening collaboration and expanding the supplier network, as listed in Table 5 (for a second priority). Increasing demand for smoked catfish often cannot be met due to constraints on raw material availability. Processing businesses that use fishery products as raw materials face unique challenges. Rosminah *et al.* (2024) state that these challenges include inconsistent quality, volume, and supply times, influenced by seasons and weather, price and supply fluctuations, and the perishable nature of raw materials. Therefore, strategies are needed to maintain production sustainability and efficiency (Abdurrokhim *et al.* 2025). Collaboration within the value chain is crucial for MSMEs (Pacheco *et al.* 2024), including collaboration with suppliers. Written collaboration with suppliers will minimize raw material supply constraints. Furthermore, Mina Nusantara needs to expand its supplier network beyond just two suppliers from Pringsewu Regency and East Lampung Regency to reduce dependence on specific suppliers, reduce the risk of raw material shortages, and maintain the continuity of smoked fish production so that it continues to run optimally despite supply fluctuations at the farmer level.

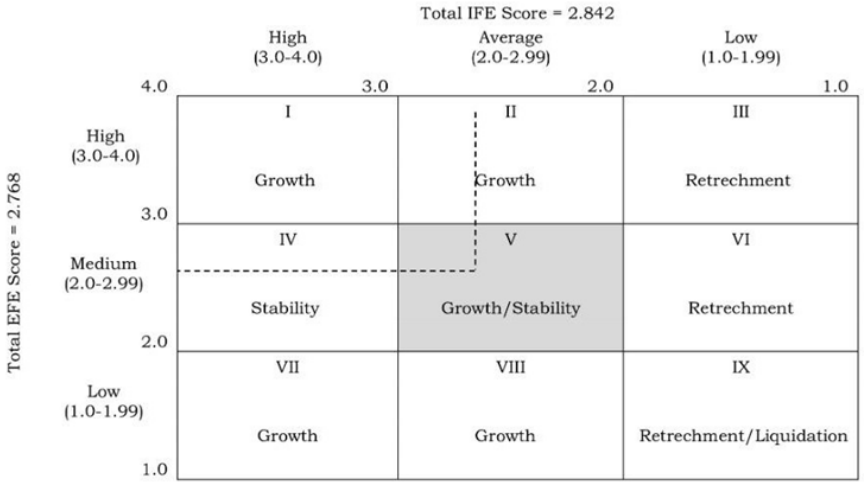


Figure 1. Internal-external matrix of Mina Nusantara smoked catfish business.

Table 4. SWOT matrix of Mina Nusantara smoked catfish business.

Internal Factors / External Factors	Strength Factor (S)	Weakness Factors (W)
	1. Having a permanent production site. 2. Having a smoking oven to increase efficiency and hygiene. 3. Having skilled human resources in smoking techniques. 4. Having loyal, repeat customers. 5. Adequate production facilities and infrastructure. 6. Using fresh, uniform catfish.	1. Packaging is still simple. 2. Inadequate administration makes it difficult to access financing. 3. Lack of capital to expand the business. 4. Product diversification has not been implemented. 5. Digital marketing is not optimal. 6. Human resources are less adaptable to digital technology.
Opportunity Factor (O) 1. Large raw material potential. 2. Production location in the city facilitates access to consumers and marketing. 3. Complete permits are in place. 4. Continuously increasing demand for smoked fish. 5. Availability of government and non-government financing programs. 6. Availability of substitute fish when catfish are scarce. 7. Government programs (training, equipment assistance, and marketing enhancement). 8. Opportunities to utilize digital technology.	**Strategy S-O** 1. Increase production to meet market demand (S1, S2, S3, S5, O1, O4). 2. Develop marketing through modern market partnerships (S4, O2, O3).	**Strategy W-O** 1. Strengthen accounting and administration systems and develop human resource capabilities in utilizing digital technology to support access to financing and improve business performance (W2, W3, O5, O7, O8). 2. Diversify products (W4, O6, O7).
Threat Factors (T) 1. There is no written agreement with suppliers, so the catfish supply is sometimes unstable. 2. There are transportation costs because the raw materials are located in different districts. 3. Digital marketing has not been optimally utilized.	**Strategy S-T** 1. Strengthening collaboration and expanding supplier networks (S1, T1). 2. Strengthening digital promotions by leveraging loyal customer testimonials and recommendations (S4, T3).	**Strategy W-T** 1. Train human resources in digital marketing and improve packaging quality (W1, W5, W6, T3).

Table 5. Recapitulation of Mina Nusantara's smoked catfish business strategy based on the QSPM (quantitative strategic planning matrix).

No	Alternatif Strategies	TAS (Total Attractive Scores)	Priorities
1	Increasing production to meet market demand.	3.924	5
2	Expanding marketing networks by entering modern markets.	3.783	6
3	Strengthening accounting and administration systems and developing human resource capabilities in utilizing digital technology to support access to financing and improve business performance.	4.745	1
4	Diversifying products.	4.519	3
5	Strengthening collaboration and expanding supplier networks.	4.610	2
6	Strengthening digital promotions by utilizing testimonials and recommendations from loyal customers.	3.475	7
7	Training human resources in digital marketing and improving packaging quality.	4.369	4

Table 5 shows that product diversification within the same line as smoked catfish, such as smoked catfish, is the next recommended alternative strategy for Mina Nusantara. Several types of fish can be processed into smoked fish (Swastawati *et al*. 2013), including freshwater and saltwater fish. The availability of substitute raw materials, such as catfish and snakehead fish, can be processed into smoked fish. This strategy is relevant as an effort to mitigate the risk of catfish raw material shortages, take advantage of wider market opportunities, and increase added value and business competitiveness. Raw material substitution can be used as an alternative to address risks in the processing business (Mas'ud *et al*. 2025). The next strategy that should be implemented by Mina Nusantara is training human resources in digital marketing and improving packaging quality. Sharabati *et al*. (2024) stated that the success of MSMEs in the era of digital transformation is largely determined by the ability to integrate digital marketing with technological readiness for business sustainability and increased competitiveness. This increased competitiveness also needs to be supported by quality product packaging, such as the use of vacuum packaging and modern packaging that supports sustainability and business competitiveness (Shivbhajan *et al*. 2024). Digital marketing has not been optimally implemented due to constraints from Mina Nusantara's human resources, which are less adaptable to digital technology. Meanwhile, MSMEs need to strengthen their digital marketing capacity and strategies to capitalize on digital opportunities optimally (Thaha *et al*. 2021).

The strategy implementation for Mina Nusantara begins with management and capital aspects through improvements to the administration and bookkeeping systems, strengthening human resource capacity, and leveraging partnerships and access to financing to support business sustainability and development. Production aspects are further enhanced through product diversification and capacity enhancement while maintaining quality. Marketing focuses on expanding market networks, utilizing digital technology, and strengthening promotions to increase sales volume and customer loyalty.

The feasibility study results indicate that the smoked catfish business is profitable and feasible to continue. However, feasibility does not necessarily guarantee long-term business sustainability and growth, especially in the face of competitive dynamics, market changes, and other external factors. Therefore, strategic development analysis is still necessary to increase competitiveness and strengthen the business's position. The formulated strategy is expected to optimize profits and maintain the sustainability of Mina Nusantara's business.

CONCLUSION

Mina Nusantara's smoked catfish business is financially feasible to continue and develop. The feasibility analysis yielded an NPV of 294,327,358 IDR, an IRR of 58.75%, a gross B/C ratio of 1.22, a net B/C ratio of 2.85, and a payback period of one year and five months. The most effective strategy for developing Mina Nusantara's smoked catfish business is to strengthen the accounting and administration system and develop human resource capabilities in utilizing digital technology to support access to financing and improve business performance, strengthen collaboration and expand the supplier network, diversify products, and train human resources in digital marketing and improve packaging quality.

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