

Strategy For Developing Catfish Maintenance Residents of The Hill Lebaksari Subdistrict Baureno Regency Bojonegoro

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Abstract: Fishery catches are a vital food source in Indonesia, including catfish, which is a key freshwater species cultivated commercially, particularly on Java. This study examines the current state of catfish farming in Lebaksari Hamlet, Bojonegoro Regency, East Java, and proposes development strategies based on socio-economic aspects. Employing a quantitative descriptive approach, the research assesses the social and economic impacts of catfish farming on local residents. Data were collected from 30 catfish farmers selected through Simple Random Sampling, covering aspects from rearing to marketing. SWOT analysis was used for data interpretation. The findings indicate that leveraging existing strengths and seizing opportunities, such as market expansion and technological advancements, can enhance catfish farming development. Key strategies include market development, optimizing farming technology, fostering partnerships with customers and business partners, sustainable natural resource utilization, and strengthening collaboration with government bodies. These strategies aim to improve productivity, economic benefits, and sustainability in catfish farming in Lebaksari Hamlet.

Keywords: Catfish rearing; Development strategy, SWOT

Introduction

Indonesia's vast aquatic territory, which exceeds its land area, presents immense opportunities for fisheries development, particularly in catfish farming. The country's geographical advantage, consisting of 5.8 million km² of territorial waters, has positioned it as a potential global maritime hub, as highlighted by Dr. I Nyoman Suyasa from the Ministry of Maritime Affairs and Fisheries. This assertion aligns with the provisions of the United Nations Convention on the Law of the Sea (UNCLOS, 1982), which recognizes Indonesia's extensive Exclusive Economic Zone (EEZ) and territorial sea, thus solidifying its maritime identity and potential for fisheries development (Lasabuda, 2013; Osmaleli, 2023).

The cultivation of catfish, particularly in Java, has gained traction due to its adaptability to various

environments and the relatively low investment required for farming. Catfish farming can be conducted in limited spaces, making it accessible to both rural and urban populations. The nutritional profile of catfish, with a protein content of approximately 20% and low fat levels, further enhances its appeal as a healthy dietary option (Ekawati et al., 2021). This aligns with findings that emphasize the importance of aquaculture in providing affordable protein sources to diverse populations, thereby contributing to food security and nutritional improvement (Rimmer et al., 2013).

Research indicates that catfish farming is not only a viable economic activity but also a significant contributor to the livelihoods of farmers. The increasing production of catfish can lead to enhanced income for farmers, which is crucial in rural areas where alternative employment opportunities may be limited (Rimmer, 2010; Rimmer et al., 2013). The ease of mastering catfish

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rearing techniques, coupled with the straightforward marketing processes, has encouraged many households to engage in this form of aquaculture (Ekawati et al., 2021). Furthermore, the development of innovative farming techniques, such as the use of tarpaulin ponds, has emerged as a practical solution for maximizing production efficiency while minimizing costs (Ekawati et al., 2021).

In Lebaksari Hamlet, the choice to utilize tarpaulin ponds for catfish farming reflects a growing trend among local farmers to adopt more efficient and cost-effective aquaculture practices. The advantages of tarpaulin ponds, including better temperature regulation and lower production costs compared to traditional cement ponds, have made them an attractive option for farmers looking to meet rising market demands (Ekawati et al., 2021). This shift towards innovative farming methods underscores the importance of research and development in enhancing aquaculture practices in Indonesia (Suryawati, 2024).

The socio-economic implications of catfish farming extend beyond individual farmers to the broader community. As catfish farming becomes more prevalent, it can stimulate local economies by creating jobs, enhancing food security, and providing a reliable source of income for families (Rimmer et al., 2013). Moreover, the integration of sustainable practices in aquaculture, such as the Ecosystem Approach to Aquaculture (EAA), is essential for ensuring the long-term viability of fish farming in Indonesia (Supriyono et al., 2022). This approach emphasizes the need for a balanced relationship between aquaculture and the surrounding environment, promoting sustainable resource management and community engagement.

The role of local NGOs and community organizations is critical in facilitating the implementation of sustainable aquaculture practices. These entities can bridge the gap between government policies and community needs, ensuring that aquaculture development aligns with local socio-economic conditions (Rusdi et al., 2022). By fostering collaboration among stakeholders, including farmers, researchers, and policymakers, the potential for sustainable growth in catfish farming can be realized.

Furthermore, the challenges faced by catfish farmers, such as disease management and environmental sustainability, necessitate ongoing research and innovation. Studies have shown that the application of advanced aquaculture systems, like Aquaponics and Recirculating Aquaculture Systems (A-RAS), can significantly improve water quality and waste management in catfish farming (Ekawati et al., 2021). These systems not only enhance production efficiency but also contribute to environmental conservation by minimizing waste and optimizing resource use.

As Indonesia continues to develop its aquaculture sector, the importance of maintaining genetic diversity in catfish populations cannot be overstated. Research has indicated that inbreeding depression can occur in farmed catfish populations, leading to declines in growth and overall health (Sunarma et al., 2016). Therefore, implementing strategies for genetic management and crossbreeding can help improve the resilience and productivity of catfish farming in the country.

The potential for catfish farming in Indonesia is vast, driven by the country's unique geographical advantages, the nutritional benefits of catfish, and the socio-economic opportunities it presents. However, realizing this potential requires a concerted effort from all stakeholders, including farmers, researchers, and policymakers, to adopt sustainable practices and innovative technologies. By doing so, Indonesia can enhance its position as a leader in global aquaculture while ensuring the well-being of its communities and the health of its aquatic ecosystems.

Method

Type Study

This type of research is quantitative descriptive. The research began by analyzing the existing situation, including the economic and social potential for developing an agribusiness system for superior commodities (catfish) to support catfish rearing in Lebaksari Hamlet, Bojonegoro. Next, an analysis of the sustainability of catfish farming was carried out by identifying the factors that influence the development of catfish farming and detailing the development scenario for catfish farming in Lebaksari Hamlet, Bojonegoro.

Data Sources and Collection

Data is information about something and can be information about something that is known, considered, or assumed. Data can also be facts represented through numbers, symbols, codes and other forms. In the context of research, data is collected through various methods such as data collection instruments, observation, interviews, and documentation. Data sources can generally be divided into two categories, namely primary data obtained directly from the source and secondary data sourced from existing information.

Data Validity

It is important to check the validity of data in research to ensure the reliability of the information obtained. Testing the validity of data in qualitative research involves evaluating *credibility* (internal validity), *transferability* (external validity), *dependability* (reliability), and *confirmability* (objectivity).

Location And Site Study

Study This done in Hamlet Lebaksari, Subdistrict Baureno, Regency Bojonegoro, Province East Java.



Figure 1. Picture Map Hamlet Lebaksari

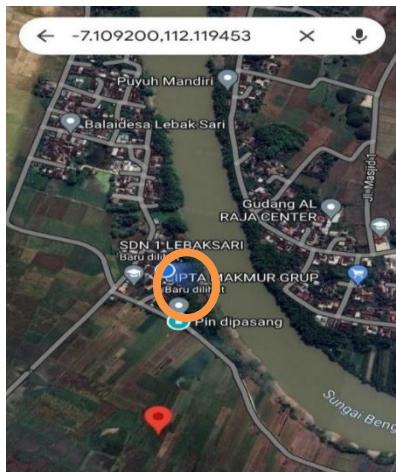


Figure 2. Picture Google Maps Location Maintenance Catfish



Figure 3. Picture Wrong One Location Pisciculture Catfish (Create Prosperous Group)

Method for Determining Respondent Samples

Determination of Respondent Samples for Maintenance Analysis (Costs, Revenue and Income)

According to Singarimbun & Effendi (1999), data analysis requires a large sample size because the distribution of values or scores obtained must follow a normal distribution. In this case, the minimum recommended sample size is 30, following a normal distribution. To determine the respondents in this study, the catfish rearing group "Cipta Makmur Grup" was chosen as the sample group, which currently consists of 75 members who are active in catfish rearing in the catfish village. A total of 30 farmers who were involved

in the entire process of raising, harvesting and marketing catfish were selected as respondents at simple random (Simple Random Sampling), which means that each member of the farmer group had the same opportunity to be selected as a sample.

Determination of Samples (Respondents) for Strategy Formulation

Key informants play a crucial role in research, particularly in the context of catfish farming in Lebaksari Hamlet, Bojonegoro Regency. These individuals, who possess extensive experience and involvement in the relevant activities, provide valuable insights into both internal and external factors influencing the development of catfish farming. Their perspectives can help identify strengths, weaknesses, opportunities, and threats (SWOT) that are essential for strategic planning in aquaculture (Amrita et al., 2023). The use of in-depth interviews with key informants allows researchers to gather nuanced information that may not be accessible through other methods, thereby enriching the research findings (Kadhafi, 2023).

The selection of key informants through the Snowball sampling method is particularly effective in this context. This approach enables researchers to identify additional respondents who can provide further insights into the dynamics of catfish farming, including breeders, traders, and government representatives (Hegde et al., 2022). The purposive sampling method ensures that respondents are chosen based on their relevant experience and ongoing involvement in the sector, which enhances the reliability of the data collected (Hegde et al., 2022). Such methodological rigor is essential for understanding the complexities of aquaculture practices and their socio-economic implications (Wibisono, 2024).

To conduct a comprehensive SWOT analysis, researchers must first compile a questionnaire that addresses both internal factors (strengths and weaknesses) and external factors (opportunities and threats) related to catfish farming (Halim et al., 2017). This structured approach allows for a systematic evaluation of the current state of the industry and the identification of strategic alternatives that can be prioritized for development (Da et al., 2013). The insights gained from key informants can inform the formulation of these strategies, ensuring they are grounded in the realities of the local context (Andriyono, 2018).

The importance of community engagement in the development of aquaculture practices cannot be overstated. Research has shown that involving local stakeholders in decision-making processes leads to more effective and sustainable management of fisheries resources (Kumar et al., 2018). By incorporating the

views of key informants, researchers can foster a collaborative approach that aligns with the needs and aspirations of the community, ultimately enhancing the socio-economic benefits of catfish farming (Varkey et al., 2010). This participatory framework is vital for ensuring that aquaculture development is not only economically viable but also socially equitable and environmentally sustainable (Amalia & Nasution, 2024).

In summary, the role of key informants in researching catfish farming in Lebaksari Hamlet is indispensable. Their insights, gathered through rigorous methodologies such as Snowball and purposive sampling, provide a foundation for conducting a thorough SWOT analysis. This analysis can guide the development of strategic initiatives that promote sustainable aquaculture practices, benefiting both the local economy and the broader community.

The respondents involved in determining weight and AS were Catfish breeders, who are selected based on higher knowledge and experience compared to other breeders, also act as administrators of the Cipta Makmur Group farmer group. This choice was made because the breeder had special views and attention to the maintenance of catfish in the Lele village and Provider of production facilities directly involved in catfish maintenance which is managed by the Cipta Makmur Group farmer group.

Analysis Data

In the context of this research, the application of descriptive research methods allows for a comprehensive analysis of both qualitative and quantitative data, which is essential for understanding the dynamics of catfish farming in Lebaksari Hamlet, Baureno District, Bojonegoro Regency. The integration of SWOT analysis serves as a strategic tool to evaluate the socio-economic impacts of catfish farming on the local population. This method facilitates the identification of internal strengths and weaknesses, as well as external opportunities and threats, which are critical for formulating effective development strategies (Kumar et al., 2018).

The SWOT analysis process involves several key stages, starting with data collection to identify relevant strategic factors. This is followed by an analytical phase where alternative strategies are developed using the SWOT matrix. The importance of employing both qualitative and quantitative data in this analysis cannot be overstated, as it allows for a more nuanced understanding of the factors influencing catfish farming (Hegde et al., 2022). For instance, qualitative insights gathered from key informants—such as breeders, traders, and government officials—can provide context to the quantitative data, enriching the overall analysis (Pedroza-Gutiérrez & López-Rocha, 2021).

The combination of qualitative and quantitative approaches is supported by research that emphasizes the value of mixed methods in agricultural studies. Such methodologies enable researchers to capture a broader range of perspectives and experiences, which is particularly important in understanding the complexities of aquaculture practices (Yang & Wu, 2023). Furthermore, the use of structured questionnaires to gather data on internal and external factors aligns with best practices in SWOT analysis, ensuring that the findings are robust and actionable (Cheatham, 2024).

Moreover, the economic implications of catfish farming, as highlighted in various studies, underscore the significance of strategic planning in this sector. For example, research has shown that the adoption of new technologies in aquaculture can lead to increased productivity and reduced costs, thereby enhancing the economic viability of catfish farming (Bozdağ, 2020). This aligns with the objectives of the SWOT analysis, which seeks to identify strategies that leverage strengths and opportunities while addressing weaknesses and threats.

The methodological framework employed in this research, which integrates descriptive research, SWOT analysis, and mixed methods, is well-suited for exploring the socio-economic aspects of catfish farming in Lebaksari Hamlet. By systematically analyzing both qualitative and quantitative data, the research aims to provide actionable insights that can inform the development of sustainable aquaculture practices in the region.

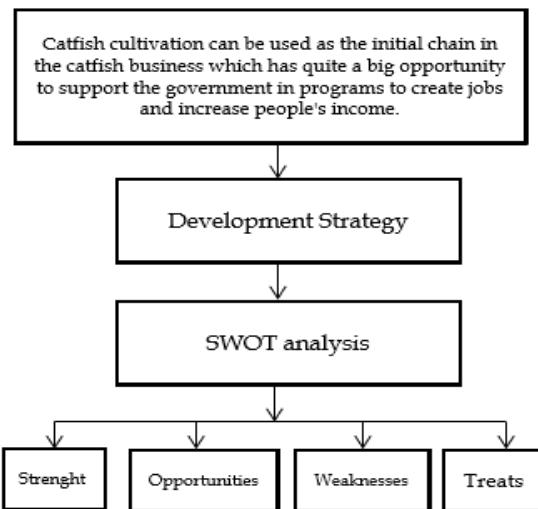


Figure 4. Operational Framework

Results and Discussion

Factor Identification Internal

Identifying internal factors is a step in which strategic planners evaluate marketing, production and

resource aspects in catfish business operations. Through analysis of the internal environment, entrepreneurs can strengthen positive aspects and reduce weaknesses, with the aim of exploiting opportunities and overcoming potential threats that may arise in the context of the venture or business. Further details can be found in the related table.

Table 1. Identification of Internal Factors for catfish business development strategies in Lebaksari Hamlet, Baureno sub-district

Strengths	Weakness
Easy maintenance	Facilities and infrastructure are inadequate
Availability of Bengawan Solo river water	Promotions that have not been effective
Continuity of Harvest Results	Capital sources are still lacking
Has a large area of land	Poor transportation conditions
Waste control	The number of workers is still insufficient

Source: Primary Data After Processing in 2023

The table above shows the strengths and weaknesses of catfish entrepreneurs in Lebaksari Hamlet, Baureno District, Bojonegoro Regency as following. Strength including Catfish maintenance is generally relatively easy, as stated by respondents. Catfish can grow quickly and can be maintained in limited land and water sources, with a high stocking density reaching 300-500 fish in one pond measuring 3x5 meters. The advantages of catfish include fast growth, high survival rates, and simplicity in terms of feed, which can include pellets and chicken intestines; The availability of water from the Bengawan Solo river in Lebaksari Hamlet, Baureno District, Bojonegoro Regency, makes the pond cleaning process easier. At harvest time, farmers only need to lift the net containing the catfish, clean it using Bengawan Solo river water, and put it back together. On the other hand, farmers who use ponds in rice fields may face difficulties in cleaning the pond after harvest, because the pond water must be replaced to prevent disease in the new seedlings; The breeders who develop the catfish business in Lebaksari Hamlet, Baureno District, Bojonegoro Regency, have large areas of land. Lebaksari Hamlet is located on the banks of the Bengawan Solo river, with a residential area of 55.5 hectares and an agricultural area of 110 hectares, and a population of around 2272 people (Department of Communication and Information, East Java Province, 2022).

Continuity of catfish harvest in Lebaksari Hamlet, Baureno District, Bojonegoro Regency, occurs every week with a total production of around 2 tons. After harvest, catfish are sorted by size, ranging from 1 to 6 per

kilogram. This sorting activity aims to simplify the marketing process; When purchasing catfish, both by consumers and wholesalers, there is no need to wait for the harvest season or harvest first. Catfish have been sorted by breeders, so consumers or wholesalers can immediately choose according to the desired size; Waste control in catfish farming in Lebaksari Hamlet is also handled easily. Farmers do not experience difficulties in dealing with waste, because the waste they encounter only comes from catfish that die due to disease. Dead catfish are thrown into the trash can as a waste disposal process. Apart from that, informants who keep catfish said that catfish do not produce waste that can pollute the water of the Bengawan Solo river.

Existing weaknesses include Improvement of Facilities and Infrastructure, Encourage catfish farmers to improve the quality of production facilities, such as fish ponds. Technical assistance and assistance from related parties, such as the Fisheries Service, can help farmers understand better technology. Facilitate training and workshops on effective land management and fish farming technology; Promotion System Improvements: Encourage the use of modern promotional methods, such as online marketing via social media or creating a website for a catfish business. Providing training to breeders regarding effective marketing strategies and how to utilize information technology in promotions; Increased Capital Sources: Assist farmers in finding alternative sources of capital, such as business loans from financial institutions or assistance programs from the government. Encourage cooperation between breeders or the formation of cooperatives to obtain joint capital.

Improvement of Transport Conditions: Explore the potential for collaboration with third parties or logistics companies to provide better transportation. Promote an efficient and environmentally friendly distribution system to overcome transportation constraints; Addition of Manpower and Improvement of Skills: Encourage skills training for the existing workforce, including in the fields of marketing and promotion. Develop collaboration with educational or training institutions to provide further knowledge to breeders and workers in the required fields and Collaboration with Related Parties: Strengthen cooperation between breeders, local government and the Fisheries Service to support the development of catfish businesses. Encourage related parties to provide technical assistance, training and information related to fisheries development programs.

Based on an assessment of the identified internal strategic factors, the next step is to develop an IFAS matrix. After that, a weighting and ranking process is carried out on each strength and weakness variable. After giving weights and ratings to each variable based

on their level of influence, a score can be generated by multiplying the weights and ratings for each variable.

By getting the score value for each variable, we can find out the main strengths and weaknesses of the catfish business in Lebaksari Hamlet, Baureno District, Bojonegoro Regency. Likewise with the identification of

external factors, which are then summarized in the EFAS matrix. This process involves weighting and ranking each opportunity and threat variable to identify the main opportunities and threats faced by the catfish business.

Table 2. Internal Strategy Factor Matrix Table

Internal Strategy Factors	Weight (B)	Rating (R)	B x R	Comment
Strength (S)				
Easy maintenance	0.18	4	0.72	Business opportunities
Availability of Bengawan Solo river water	0.08	4	0.32	Utilization
Continuity of Harvest Results	0.13	4	0.52	Improved
Has a large area of land	0.11	4	0.44	Business opportunities
Waste control	0.05	3	0.15	Maintained
Sub Total	0.55	19	2.15	
Weakness (W)				
Facilities and infrastructure are inadequate	0.10	2	0.2	Plus
Promotions that have not been effective	0.07	2	0.14	Use of print media
Capital sources are still lacking	0.15	1	0.15	Solutions for adding or seeking loans/credit
Poor transportation conditions	0.05	2	0.1	Additional transportation
The number of workers is still insufficient	0.08	2	0.16	Additional workforce and training
Sub Total	0.45	9	0.75	
Total	1.00	28	2.9	

Source: Primary Data After Processing in 2023

Based on the results of interviews with respondents and analysis of the internal environment of the catfish business, factors were found that could be categorized as strengths and weaknesses. Based on the recapitulation in the internal strategy factor matrix in table 4.8, the main strength for catfish entrepreneurs is ease of maintenance with a score of 0.72. Apart from that, continuity of harvest results received a score of 0.52, having large areas of land with a score of 0.44, availability of water from the Bengawan Solo River with a score of 0.32, and waste control with a score of 0.15.

On the other hand, the main weaknesses identified by respondents include poor transportation conditions with a score of 0.01, inadequate facilities and infrastructure (score 0.2), ineffective promotion (score 0.14), limited sources of capital (score 0.15), and a shortage of workers (score 0.16).

Overall, based on the final results of the IFAS matrix, the total strength and weakness factor score is 2.9. This score consists of a subtotal strength score of 2.15 and weaknesses of 0.75. This reflects that the internal position of the catfish business in Lebaksari Hamlet, Baureno District, Bojonegoro Regency, in developing the catfish business is able to utilize its strengths and succeed in overcoming some of its existing weaknesses.

Identify Factors External

Identification of external factors is a step in analyzing elements that are outside the direct control of a business and have the potential to influence the development and performance of the business. These external factors are difficult for entrepreneurs to control, but understanding the external environment is very important to anticipate and respond to changes that may occur. The influence of events, developments and changes in the external environment can have an impact on business continuity and success.

The external environment is divided into two types that are interrelated and influence each other, namely the micro external environment (or industrial environment) and the macro external environment (or general environment). The external micro environment includes factors that more directly influence a business and is often specific to a particular industry. Examples involve competitors, customers, suppliers, financial institutions, and other factors that have a close relationship with the business.

Table 3. External Factor Identification Table

External Strategy Factors
<i>Opportunities (O)</i>
Social and cultural
Have close relationships with distributors
The price of catfish is cheaper
There are industries that use catfish as raw materials
Technological development
<i>Threats (T)</i>
Population preference for catfish is less (especially Bojonegoro Regency)
Unpredictable season
Increased marketing of marine fish
Competition between freshwater fish entrepreneurs
Discipline

Source: Primary Data After Processing in 2023

Meanwhile, the external macro environment involves broader and more general factors, which can influence the business indirectly. This includes economic, social, political, technological and environmental factors that can have a significant impact

Table 4. Strategy Factor Matrix Table External

Internal Strategy Factors	Weight (B)	Rating (R)	B x R	Comment
Opportunities (O)				
Social and cultural	0.05	4	0.20	Increased yield
Have close relationships with distributors	0.12	3	0.36	Keep it up
The price of catfish is cheaper	0.12	4	0.48	Maintained
There are industries that use catfish as raw materials	0.11	4	0.44	Business opportunities
Technological development	0.11	4	0.44	Utilization
Sub Total	0.51	19	1.92	
Threats (T)				
Population preference for catfish is less (especially Bojonegoro Regency)	0.09	2	0.18	Should be aware
Unpredictable season	0.10	2	0.2	Hampered
Increased marketing of marine fish	0.05	1	0.15	Another alternative solution
Competition between freshwater fish entrepreneurs	0.05	2	0.05	Should be aware
Discipline	0.05	2	0.1	Important to note
Sub Total	0.49	9	0.73	
Total	1.00	28	2.65	

However, there are threats to the catfish business, such as the receding water of the Bengawan Solo River and the time that needs to be taken into account, both of which get the same score, namely 0.2. Threats also come from the population's preference for catfish (especially in Bojonegoro Regency) with a score of 0.18, increased marketing of marine fish which can compete with a score of 0.05, and competition between similar fish entrepreneurs with a score of 0.1.

on a business without being directly related to a particular industry. By identifying and understanding these external factors, entrepreneurs can be better prepared to face change and take appropriate strategic steps to maintain the competitiveness and sustainability of their businesses.

Based on the results of interviews with respondents in Lebaksari Hamlet, Baureno District, Bojonegoro Regency, and analysis of the external environment in the catfish business, a score has been produced to identify opportunities and threats. In the external strategy factor matrix in table 17, it is found that the opportunity for catfish prices to be cheaper compared to other fish gets a score of 0.48. Apart from that, the existence of industries that use catfish as raw materials and technological developments also have significant opportunities, each with a score of 0.44. Other factors identified were having a close relationship with distributors with a score of 0.36, as well as social and cultural aspects with a score of 0.2.

Overall, based on the final results of the EFAS matrix, the total opportunity and threat factor score is 2.65. This score consists of a subtotal opportunity score of 1.92 and a subtotal threat score of 0.73. This analysis shows that externally, the catfish business in Lebaksari Hamlet has quite significant opportunities, but is still faced with several threats that need to be considered to increase competitiveness and business sustainability.

SWOT Quadrant, IE Matrix and Matrix SWOT

The SWOT Quadrant Diagram is a strategic analysis tool used to evaluate internal factors (strengths and weaknesses) and external factors (opportunities and threats) of an organization or business (Sammut-Bonnici & Galea, 2015). Based on the calculation of the difference from the subtotal scores of the IFAS and EFAS matrices, the position of the catfish business in Lebaksari Hamlet, Baureno District, Bojonegoro Regency can be determined on the SWOT Quadrant diagram.

The following is a summary of the internal and external analysis coordinate calculations:

Internal Analysis Coordinates (x_1, y_1):

Strengths - Weaknesses = $2.15 - 0.75 = 1.4$

External Analysis Coordinates (x_2, y_2):

Opportunities - Threats = $1.92 - 0.73 = 1.19$

So, the coordinate points (x, y) for the SWOT analysis of the catfish business in Lebaksari Hamlet are (1.4, 1.19).

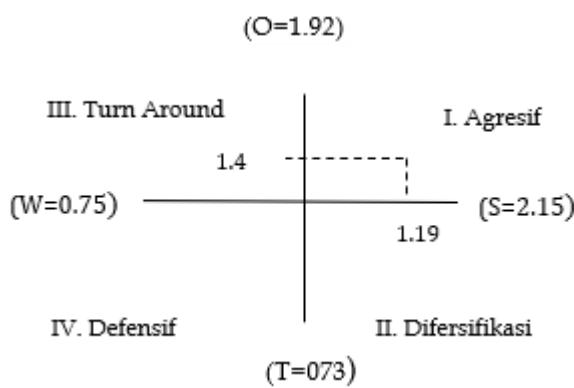


Figure 5. SWOT Coordinate

Table 5. Total Internal Factor Score

I	II	III
Growth Through Vertical Integration	Growth Through Horizontal Integration	Downsizing Through "Turn Around"
IV	V	VI
Stability	Pertumbuhan melalui Integrasi Horizontal atau Vertikal	Difestation
VII	VIII	IX
Growth Through Concentric Differentiation	Growth Through Conglomerate Differentiation	Liquidation

Conclusions

A summary of research results in Lebaksari Hamlet, Baureno District, Bojonegoro Regency, provides the conclusion that Strengths Possessed are the potential for

developing the catfish market is quite large. And utilization of technology that can be optimized to increase efficiency. Existing Opportunities include an opportunity to develop the catfish market and potential for more optimal use of technology. Recommended Development Strategy include Market Development: Focus on market expansion and seek wider marketing opportunities; Optimizing Technology Utilization: Increasing operational efficiency through the use of the latest technology; Improving Collaboration: Better collaboration with customers, business partners and other related parties to support each other and improve networks; Utilization of Natural Resources: Manage natural resources as well as possible to support business sustainability; Collaboration with the Government: Building solid cooperation with the government to support the development of the catfish business, including getting support and access to various resources. Through the implementation of these strategies, it is hoped that the catfish business in Lebaksari Hamlet can grow and develop sustainably by utilizing existing market potential and technology, while establishing close collaboration with various related parties.

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Author Contributions

Conceptualization, O.R., M.M., N.B. and D.A.; methodology, O.R.; validation, M.M., N.B. and D.A.; formal analysis, O.R.; investigation, O.R.; resources, O.R.; data curation, M.M., N.B. and D.A.; writing—original draft preparation, O.R.; visualization, M.M., N.B. and D.A. All authors have read and agreed to the published version of the manuscript.

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Conflicts of Interest

The authors declare no conflict of interest.

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