BUSINESS FEASIBILITY ANALYSIS CATFISH REARING CULTIVATION (CLARIAS GARIEPINUS) AT THE ROUND POND PT. TIMUR MANDIRI AKUAKULTUR

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ABSTRACT

Business feasibility analysis needs to be done for new businesses that want to open or are already running to provide information and an overview of what a catfish farming business looks like, whether it is still feasible or not to farmers. The purpose of this study is to determine the pattern of catfish enlargement farming business and determine the feasibility of catfish enlargement farming business from market and marketing aspects, technical aspects, management and organizational aspects, economic and social aspects, environmental aspects, and legality aspects, as well as knowing the financial feasibility of catfish enlargement farming business carried out by PT. Timur Mandiri Akuakultur. Financial feasibility analysis method using the method Net Present Value, Internal Rate of Return, Net B/Cand Payback Period. The results of the analysis on non-financial aspects show that the business is still feasible to run and develop. The results of the financial aspect analysis based on the value of the investment criteria obtained that the business is feasible to run and develop.

Keywords*: Feasibility Study; Cat Fish Enlargement Discretion; Venture Eligibility Analysis*

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INTRODUCTION

Catfish farming has developed a lot and is known by the wider community as a delicious consumption fish with a fairly high protein content (Siddik et al., 2021). Even what used to be known as fish is only consumed by low-income people, but lately increasingly preferred by all circles of society. The catfish farming fisheries business is one of the sources of fish production to maintain the sustainability of the fisheries sector and national food security (Folorunso et al., 2021).

Catfish have actually been known since the 1970s, but until the first half of the 1980s it was still rarely cultivated (Tucker & Schrader, 2020). The catfish cultivation business at that time mostly still relied on natural catch seeds. Because it is still considered rare, the catfish menu includes luxury food, many listed in the list of dishes as a special dish at a relatively expensive price at that time (Pratama et al., 2023). Catfish began to be cultivated intensively in 1987 after the arrival of African catfish from Taiwan named Dumbo catfish (Clarias gariepinus). Now catfish are easy to find and the supply is always available so that the catfish menu is increasingly popular and affordable (Pujiastuti, 2017).

Catfish is a freshwater fishery commodity that is very popular but also favored by all groups of society (Gustiano & Gadis Sri Haryani, 2021). Processed catfish products are widely found, from roadside tent stalls to restaurants and restaurants, as one of the main menus. Therefore, catfish can be considered upscale, not only as a low-class food (Kartikaningsih et al., 2022). The advantages of catfish commodities include; The taste can be accepted by the majority of people, the price is affordable, the protein and nutritional content is high, easy to obtain, easy to process, and the cultivation process and quality of catfish are getting better (Iqbal & Dini, 2017). These advantages provide information that the catfish-rearing farming business is a good business opportunity and can increase income (Pasch & Palm, 2021). Many people think that catfish farming can be done easily, this statement is said to be true when viewed from technical factors, because catfish is a type of fish that is easy to cultivate, tolerant of poor water quality, resistant to disease, can be stocked with high density and fast growth. However, the reality in the field shows that not everyone who is involved in the catfish enlargement business can get profits as expected (Prihartono et al., 2010).

Many cases occur in the community, catfish rearing farmers (Engle et al., 2022), especially in Jember Regency and City, do not continue farming activities because of losses. This is caused by several factors, including; a lack of knowledge about catfish enlargement farming, utilization of local resources around the aquaculture environment is not optimal, improper business analysis, and inaccurate marketing strategy (Irawan et al., 2024).

Catfish productivity always increases every year, starting from 2015 to 2017, especially for the Jember City area. This can be seen from the data released by the Livestock, Fisheries and Marine Service of Jember Regency.

Table 1
Freshwater Fish Production Data of Jember Regency

No	Production Type	*Breeding*	
		Production (Ton)	*Value* (Ton)
1	Carp	117,10	2 560 600
2	Nile Tilapia Fish	346,10	7 024 600
3	Gourami	2 467,20	62 131 700

4	Catfish	7 343,40	106 105 750
5	Java Barp, Silver Barp Fish	31,80	564 450
6	Tilapia Fish	-	-
7	Snakehead Fish	-	-
8	Silver Rasbora Fish	-	-
9	Freshwater Lobster	-	-
10	Eel	-	-
11	Other fish	15,70	309 500
12	Vanamei Shrimp	1 339,10	87 041 500
13	Milkfish	13,70	233 800
14	White Shrimp	-	-
15	Other shrimp	-	-
	Year 2017	11 714,10	265 971 900
	Year 2016	11 172,20	278 985 400
	Year 2015	9 142,9	195 534

Source: Department of Animal Husbandry, Fisheries and Marine Regency of Jember, 2020

According to statistical data from the Livestock, Fisheries and Marine Service of Jember Regency regarding freshwater fish production often experienced fluctuations in income recorded in 2015 reaching 9,142.9 tons, then in 2016 catfish production figures rose with revenues of 11,172.20 tons, after that in 2017 catfish production figures in Jember Regency reached 11,714.10 tons. Of the total freshwater fish production in Jember Regency, the most is catfish production which reached 7,343.40 tons.

Based on the data, this research is important to be carried out to develop catfish commodities. Business feasibility analysis needs to be done for new businesses that want to open or are already running to provide information and an overview of what a catfish farming business looks like, whether it is still feasible or not to farmers. This research was conducted at PT. Timur Mandiri Akuakultur is located in Jember Regency because it has been quite long and has grown large in the cultivation sector, especially the enlargement segment.

LITERATURE REVIEW

Feasibility Study

A feasibility study is an in-depth analytical process that aims to evaluate the potential success of a project or venture (Alrawi, 2020). In the context of the Business Feasibility Analysis for catfish farming in PT Timur Mandiri Aquaculture's round ponds, the study involves a comprehensive examination of various relevant aspects. First of all, the study considered the Market Aspect by analyzing the market demand for catfish, including factors such as consumer trends and exploitable market potential. Next, the Technical Aspects were evaluated with a focus on the location of the ponds, the required infrastructure such as irrigation and waste management systems, and the optimal farming technology (López-Felices B et al., 2023). The Financial Aspect is crucial in assessing the feasibility of the project, taking into account the initial investment cost, operational cost, and projected revenue to gauge the potential profitability of the investment (de Oliveira Azevêdo et al., 2021). In addition, the study also looks at the Legal and Regulatory Aspects to ensure that the

project complies with all applicable regulations and obtains the necessary permits before operating (Yıldız & Kural, 2020).

Finally, the environmental aspects were evaluated to understand the environmental impacts of the catfish farming activities, including efforts to maintain the sustainability of the local ecosystem (Chen et al., 2021). By combining all these analyses, this feasibility study aims to provide a comprehensive overview that supports strategic decisions regarding the implementation of the catfish farming project at PT Timur Mandiri Aquaculture, with the ultimate goal of achieving sustainable economic success and risk minimization.

Variables commonly measured in a feasibility study for catfish (Clarias gariepinus) farming may include:

1. Market Aspect : Market analysis to determine the demand and market potential for catfish products.
2. Technical Aspect : Technical evaluation related to pond location, required infrastructure (such as water, rearing system), and fish farming management.
3. Financial Aspect : Assessment of the required investment, operating costs, projected revenue, and cost-benefit analysis.
4. Legal and Regulatory Aspects : Ensure compliance with regulations and licenses required for fish farming.
5. Environmental Aspects : Evaluation of the environmental impact of the fish farming activity.

The criteria for determining whether a catfish farming project is considered feasible may vary depending on the specific objectives and context of the feasibility study. However, in general, some common criteria used to assess the feasibility of a project include:

1. Return on Investment (ROI) : The expected rate of return on investment of the project.
2. Payback Period : The time required to recoup the initial investment.
3. Net Present Value (NPV) : The present value of the expected net cash flows of the project.
4. Internal Rate of Return (IRR) : An internal rate of return that measures the profitability of the project.

Other criteria may include market stability, environmental sustainability, and compliance with regulations and industry standards. By conducting a comprehensive feasibility study and considering all relevant factors, it can be decided whether catfish farming in a particular location and condition at PT Timur Mandiri Akuakultur can be effectively and profitably run.

Non-Financial Analysis

Non-Financial Analysis is an evaluation process that considers not only financial aspects but also non-financial factors that influence the success or failure of a project or business decision. In the context of data analysis, Non-Financial Analysis often involves an in-depth evaluation of the following aspects:

1. Social and Cultural Aspects: Assess the impact of the project on the local community, including social acceptance, culture, and response to the project.

2. Environmental Aspects: Evaluate the environmental impacts of project activities, including natural resource management, emissions reduction, and sustainability practices.
3. Technology and Innovation Aspects: Measures the ability of the technology used in the project to improve operational efficiency and competitiveness.
4. Ethics and Compliance Aspects: Assesses the project's adherence to ethical standards, codes of conduct, and compliance with applicable regulations and laws.
5. Risk Management Aspects: Evaluate the risk mitigation efforts identified in the project, including the risk management strategies implemented.
6. Quality and Safety Aspects: Assess the quality standards of the products or services produced as well as efforts to ensure operational security.
7. Stakeholder Relationship Aspects: Analyzes the project's interaction with related parties, including relationship management with stakeholders and stakeholders.

This non-financial analysis aims to provide a broader and holistic insight into the project or business decision, as well as assist in identifying potential risks and opportunities that may be missed in a purely financial analysis (Cupertino et al., 2023). By combining these two approaches, stakeholders can make more informed and strategic decisions to support the long-term success of the project or business.

Financial Analysis

Financial Analysis is a meticulous evaluation process designed to assess the financial health and performance of a business entity or project (Zhu et al., 2021). It serves as a critical tool to gain comprehensive insights into both the present financial status and the anticipated future financial prospects (De Villiers & Sharma, 2020). By scrutinizing various financial statements such as the balance sheet, income statement, and cash flow statement, Financial Analysis offers a detailed overview of the company's assets, liabilities, equity, revenues, and expenditures over a specific period. Moreover, it employs key financial ratios including liquidity ratios, profitability ratios, and leverage ratios to gauge the financial stability, operational efficiency, and profitability of the entity (Maisharoh & Riyanto, 2020).

This analysis also involves analyzing trends and changes in financial metrics over time, providing valuable insights into the company's financial trajectory and performance trends (Zhao et al., 2023). Furthermore, through financial projections and sensitivity analyses, Financial Analysis forecasts future financial performance and assesses the impact of various economic scenarios on business outcomes (Wetzel & Hofmann, 2019). Ultimately, by integrating these comprehensive evaluations, Financial Analysis not only helps stakeholders understand the current financial standing of the organization but also aids in identifying potential risks, opportunities, and strategic initiatives to optimize financial outcomes and sustain long-term success. In the context of data analysis, Financial Analysis involves an in-depth evaluation of several key aspects:

1. Financial Statements : Key financial statements such as the balance sheet, income statement, and cash flow statement are used to identify the financial health of the company. This includes an assessment of the company's assets, liabilities, equity, revenues, costs, and cash flows.
2. Financial Ratios : Financial ratios are used to measure a company's financial performance and compare it to similar industries or relevant standards. Examples of financial ratios include liquidity ratios (such as current and quick ratios),

profitability ratios (such as Return on Equity and Return on Assets), debt-to-equity ratios, and operational efficiency ratios.

3. Analysis of Change : Analyzing changes in key components of financial statements over time helps in identifying relevant trends and patterns in financial performance. For example, annual revenue growth, changes in operating expenses, and changes in the company's capital structure.
4. Financial Projections : Financial projections are used to estimate future financial performance based on customized assumptions and scenarios. This includes projections of revenues, costs, cash flows, and expected profits.
5. Sensitivity Analysis : Sensitivity analysis is used to measure the impact of changes in key variables such as sales, costs, or interest rates on a company's financial results. It helps in understanding the level of risk associated with a particular project or business decision.
6. Time Value of Money : Time value of money evaluation is used in analyzing the present value of the expected future cash flows of a project or investment, using methods such as Net Present Value (NPV) or Internal Rate of Return (IRR).

By combining all these aspects, Financial Analysis provides a comprehensive picture of the financial performance of a company or project, as well as assists in identifying potential risks and opportunities that may be missed in a purely non-financial analysis. This analysis is an important tool in supporting informational and strategic decision-making for management and other stakeholders.

METHOD

This research was carried out from August 14, 2023, to December 17, 2023, at PT. Timur Mandiri Akuakultur, Keting District, Jember Regency, East Java Province. The method used in this study is the internship method. According to Sumardiono (2014), internship is a process of learning from an expert through real-world activities. In addition, internships are the process of practicing knowledge and skills to complete problem real all around. Internship activities are carried out to achieve the objectives of this research. The data collection method of this study used observation and interview methods. By conducting non-financial and financial analyses obtained from interviews with catfish enlargement farming business actors at PT. Timur Mandiri Akuakultur. The data analysis used, the qualitative descriptive method according to Sugiyono (2018) is the process of systematically searching and compiling data obtained from interviews, field notes, and documentation, by organizing data into categories, describing it into units, synthesizing, arranging it into patterns, choosing which ones are important and what will be learned, and making conclusions so that they are easily understood by oneself and others.

Financial Analysis involves a comprehensive evaluation process aimed at assessing the financial performance and viability of a business entity or project. In the context of the Business Feasibility Analysis for catfish rearing cultivation (Clarias gariepinus) at the round pond of PT. Timur Mandiri Akuakultur, several variables and aspects are measured and analyzed to determine feasibility. Market analysis is critical, focusing on understanding local and regional demand for catfish, consumer preferences, and market trends. Technical aspects include evaluating pond conditions, water systems, and optimal cultivation techniques. Financially, the analysis covers initial investment calculations, monthly operational costs such as feed and utilities, and projected revenue and profits from catfish sales. Legal and

regulatory aspects ensure compliance with environmental standards and necessary permits. Environmental considerations assess the impact of fish farming activities on the local ecosystem. Integrating these analyses helps in making informed decisions regarding the feasibility of developing catfish rearing at PT. Timur Mandiri Akuakultur, ensuring sustainable and profitable operations.

RESULTS AND DISCUSSION

Market and Marketing Aspects

In running a business, you should first know the market and marketing aspects that will be entered by the products that will be produced by the business to be run. The market aspect is used as an indicator of how much opportunity and demand the catfish consumption market has for now and in the future. To find out the opportunity or market demand, it is necessary to know the level of market demand in the past, present, and future. The market aspect is said to be feasible if it has a market opportunity, where demand is greater than supply. Success in running a business requires a marketing strategy and careful assessment of market aspects.

In the catfish enlargement business PT. Timur Mandiri Akuakultur, market aspects to be studied include catfish market demand, consumption and production supply. Although the production site of PT. Timur Mandiri Akuakultur in Jember Regency, but for marketing is carried out in the Jember Regency and Lumajang Regency areas because of the closer location and the potential for large demand. The intended market is in the form of fish markets in Jember Regency, restaurants, fishing ponds, and collectors. The demand for consumption catfish is seen from around Jember Regency which is the main market. For the supply side carried out, judging from the production produced by the catfish enlargement business of PT. Timur Mandiri Akuakultur.

1) Request

   The market potential for catfish is still high. This is shown by the many enthusiasts for the consumption of catfish as a source of animal protein. The demand for consumption catfish has increased along with the increasing population. Especially Jember Regency, Jember Regency is one of the regencies in East Java whose fisheries potential has good prospects, especially in freshwater fish farming. This is because the market for commodities is still wide open for freshwater fish production, especially catfish which are still unable to meet market needs.

   The potential absorption of consumption catfish production in Jember City is very promising, because the total freshwater consumption of fish production in 2017 amounted to 11,714.10 tons/year, from 11,714.10 tons of total freshwater fish production of catfish production of 7,343.40 tons/year. That is, of all freshwater fish production that dominates is catfish production. This great opportunity is taken advantage of by PT. Timur Mandiri Akuakultur.

2) Offers

   Catfish consumption needs in Jember City are met from Sumberbaru District and Tanggul District and surrounding districts, such as Jember and Lumajang Districts. Catfish consumption offers from PT. Timur Mandiri Akuakultur depends on the harvest. The duration of the process of raising catfish from seed to harvest takes 3 months.

   In the production process carried out by PT. Timur Mandiri Akuakultur enlargement ponds are filled with seeds until harvest gradually because it

maintains a continuous supply to the collectors. The production target set in this business is 3000-4000 kg per cycle. Catfish enlargement production at PT. Timur Mandiri Akuakultur for 5 years from 2019-2023 (18 production cycles) can be seen in Table 2

Table 2
Catfish Production Consumption at PT. Timur Mandiri Akuakultur

Cycle	Types of Commodities	Number of Pools (Units)	Production (kg)
1	Catfish Consumption	38	6905
2	Catfish Consumption	38	6946
3	Catfish Consumption	32	5470
4	Catfish Consumption	38	6740
5	Catfish Consumption	20	3479
6	Catfish Consumption	29	4978
7	Catfish Consumption	30	5290
8	Catfish Consumption	22	3989
9	Catfish Consumption	24	4257
10	Catfish Consumption	19	3084
11	Catfish Consumption	20	3391
12	Catfish Consumption	21	3220
13	Catfish Consumption	5	721
14	Catfish Consumption	10	1153
15	Catfish Consumption	6	753
16	Catfish Consumption	11	1570
17	Catfish Consumption	9	1138
18	Catfish Consumption	6	880

Source : Primary Data, 2023

3) Marketing Strategy

Marketing can be interpreted as finding or creating a market. Every business usually needs to always set a strategy and how to carry out its marketing activities. One element in an integrated marketing strategy is the marketing mix strategy, which is a strategy carried out by the company. The variables of the marketing mix strategy are product strategy, pricing, distribution, and promotion. The marketing mix applied includes:

a. Product Strategy

In the business of PT. Timur Mandiri Akuakultur products are produced in the form of consumption fish, namely catfish. Product strategy consists of several factors contained in a product are quality, size, appearance, type, service, and guarantee. However, due to the efforts of PT. Timur Mandiri Akuakultur produces consumer fish products, so the harvest is in the form of catfish with a size of 10-12 heads per kilogram. The quality and quality of the products produced are good because the food given is in the form of pellets and there is no mixture whatsoever. The catfish meat is more savory and does not cause too fishy smell.

b. Pricing Strategy

Pricing strategy is very important especially to maintain and improve the position of products offered in the market. Business PT. Timur Mandiri Akuakultur which is a self-owned pond business that is only able to accept market prices that are usually known to catfish collectors. The price of products produced by PT. Timur Mandiri Akuakultur is a consumption catfish with a harvest size of 10-12 heads per kilogram with an average price of Rp.20,000. the price is a net price.

c. Distribution Strategy

Distribution activities are activities to deliver products to consumers at the right time. Therefore, distribution activities are one of the integrated marketing policies that include determining marketing channels and physical distribution. The influencing factors are distribution channels, location, inventory, means of transportation, and distribution coverage. The distribution system of the production of the enlargement business of PT. Timur Mandiri Akuakultur through collecting merchants which are then sold to new retailers to end consumers.

d. Promotion Strategy

A product in the form of any goods or services is useful, but if it is not known by consumers, then the product will not be known for its benefits and may not be purchased by consumers. To support the success of marketing activities carried out and the effectiveness of the marketing plan prepared, the company must determine and implement the right promotional strategy. The elements of the promotional strategy consist of advertising, publicity, personal selling and sales promotion. Catfish enlargement business carried out by PT. Timur Mandiri Akuakultur implements promotional strategies using social media such as Facebook. For the sale of production products, PT. Timur Mandiri Akuakultur collaborates with traders, collectors, and retailers who act as buyers of consumption catfish production.

Based on market and marketing potential analysis, PT. Timur Mandiri Akuakultur which produces consumable fish products, namely catfish, still uses a simple marketing strategy. Meanwhile, from the demand side, it is still high and from the supply side, it is quite good. So it can be concluded that the catfish enlargement effort carried out by PT. Timur Mandiri Akuakultur is still feasible to run and develop again.

Technical Aspect Analysis

Technical aspects are aspects related to the technical business establishment process and its operation after the business is completed. Covers business location, production area, and production process. The following are the results of the analysis of each criterion of technical aspects of PT. Timur Mandiri Akuakultur.

1) Business Location

Business location of PT. Timur Mandiri Akuakultur is located on Jl. Citra Pahlawan Gang Sungai Gangga, Krajan 1, Keting, Jember Regency. Some of the considerations for choosing a business location are:

a. Water Availability

The availability of water as the main medium in catfish-rearing efforts is very important. PT. Timur Mandiri Akuakultur uses a borehole water source located

approximately 12 meters from the ground. The quality of the water used is quite good because it has not been contaminated with factory and household chemicals.

b. Availability of raw materials

The raw materials needed to run a catfish enlargement business are seeds and feed. To obtain catfish seeds, PT. Timur Mandiri Akuakultur buys seeds from suppliers located on Jl. Semboro, Semboro District, Jember Regency where the seed supplier is located adjacent to the sugar factory. For pelleted feed, PT. Timur Mandiri Akuakultur uses homemade feed, feed brand Floating Fish Feed Timoer Mandiri Feed Mill.

c. Labor Supply

Enlargement efforts carried out by PT. Timur Mandiri Akuakultur is managed by 2 employees. The finance department will be handled by the Administration department, while the supervision is handled by the Head of Production. For the distribution of tasks not specifically but carried out in cooperation. This labor need is obtained from the community around the business who are still neighbors and relatives with UMR salaries. The fulfillment of labor does not experience difficulties because catfish enlargement businesses do not use sophisticated technology or do not require workers who have high knowledge.

d. Transportation Facilities

Business location of PT. Timur Mandiri Akuakultur is located in a village that already has paved road facilities with good conditions. There are four-wheeled vehicle facilities in the form of pickup cars to transport the harvest to the market location. There is no difficulty getting to the business location because it can be accessed by two-wheeled or four-wheeled vehicles.

e. Climate and Soil Conditions

Climatic conditions in the Keting Village area of Jember Regency are quite supportive for the catfish enlargement cultivation business because the temperature is still at the ideal level. It ranges from 23°C-32°C. Environmental conditions that have not been contaminated with factory or household chemicals so that they are suitable for cultivation activities.

f. Discretionary Technology

Cultivation technology is closely related to the cultivation system used. The cultivation system used by PT. Timur Mandiri Akuakultur is a conventional system. Where when the pond is ready, water enters with a height of 40 cm and then given a drug called PK (Potassium Permanganate), and the pond is allowed to stand for one day before the seeds are stocked.

2) Production Area

PT. Timur Mandiri Akuakultur has a land area of approximately 700 m^2. The land used for catfish cultivation covers an area of 654 m^2, with a total of 38 units of round tarpaulin ponds with a diameter of 3 meters. While the 46 m^2 is intended for rest and storage. The scale of business carried out by PT. Timur Mandiri is quite large with an average production capacity of 2000-3000 kg per cycle.

The results of the analysis of technical aspects by conducting interviews, observations, and information obtained, it can be concluded that the enlargement of

round tarpaulin pond catfish was carried out by PT. Timur Mandiri Akuakultur is viable. Based on business location and production area, PT. Timur Mandiri Akuakultur has no obstacles in running a catfish-rearing business.

Management and Organizational Aspects

Management and organizational aspects are very important aspects analyzed for the feasibility of a business. Both human resources and the company's overall plan must be prepared following the company's goals. Company goals will be easier to achieve if they meet the rules or stages in the management process. This management process or rule will be illustrated from each existing management function.

To raise catfish PT. Timur Mandiri Akuakultur has implemented a planning function although it is still simple. From technical preparation, equipment, labor, costs, implementation time, and so on even though they are not made in a structured manner. In this business, bookkeeping has been carried out although it is still very simple. The target time for catfish production is 3 months.

In the catfish enlargement business PT. Timur Mandiri Akuakultur has implemented an organizing function. This can be seen by the clear division of duties and responsibilities among workers, although sometimes do duplicate activities because the number of workers is still limited to two people.

It can be concluded that this catfish enlargement business is feasible to run from the aspect of management and organization, and the management function in the business has been well accepted, although in reality, it is not perfect.

Economic and Social Aspects

In this aspect, what is seen is how much the business being run has a positive and negative impact on the entrepreneurs themselves, the community around the location, and related agencies. In the catfish enlargement business PT. Timur Mandiri Akuakultur assessment was conducted from observations and interviews with the community around the business. The existence of PT. Timur Mandiri Akuakultur does not have a negative impact on the economic and social conditions of the area around the business. This business, it has a positive impact, on entrepreneurs themselves, increasing income and family living standards and opening job vacancies which of course also provide jobs for residents around the business. The unpleasant smell that usually arises from cultivation activities, this does not happen because the feeding is not excessive and according to cultivation standards.

The results of observations and information obtained, that catfish cultivation carried out by PT. Timur Mandiri Akuakultur is feasible to run because it does not cause negative economic and social impacts on the environment around the business.

Environmental Aspects

This aspect is closely related to the environment around cultivation. As in general, industrial business activities cause negative effects and impacts on the surrounding environment because they produce end products in the form of hazardous waste, this catfish enlargement cultivation business only produces waste in the form of water that has been mixed with the rest of the feed and fish waste. However, this does not harm the surrounding community because the remaining water of cultivation contains nutrients and is a good organic fertilizer for plants. As a result of observations and information obtained, catfish enlargement efforts from environmental aspects are feasible.

Legality Aspect

This aspect analyzes the form of legal entity that is run as well as the business license obtained by the company. This catfish enlargement business is only owned by individuals. The capital and costs used in running this catfish enlargement business all come from business owners. Business profits and losses must be borne by the owner himself. The current permits and legalities are only from the village administration and the local fisheries office. From the results of interviews with the owner, this catfish enlargement business is worth developing.

Financial Qualification Analysis

Financial feasibility analysis is carried out to determine the feasibility of the tarpaulin pond catfish enlargement business and information from the owner to further develop the existing business. Some things that must be considered in the financial aspect are inflow, outflow, financial feasibility analysis. The assumptions used in the financial feasibility analysis of PT. Timur Mandiri Akuakultur is:

a. Business funding capital comes from own capital, namely business owners.
b. The project life of 5 years is based on the economic life of the pond tarpaulin material used in enlargement activities.
c. The interest rate used is 6% per year or 1.5% for 1 production cycle (3 months), which is the highest interest rate on Bank BRI deposits in 2023
d. Catfish enlargement began to be implemented in 2019.
e. The catfish enlargement cycle is carried out three months or four times a year.
f. The survival *rate* (SR) of catfish reaches 95%.
g. For the density (population) level is 700 heads per 1 m^3 of 2000 heads for one enlargement pond.
h. The selling price of catfish is Rp.20,000 per kilogram at the farmer level with a measurement of 10-12 heads for every one kilogram.

Receiving Current (Inflow)

Revenue is the flow of revenue obtained during the business. It is also the result of the multiplication between the quantity of production produced and the selling price set in a period. The flow of revenue in the catfish enlargement business of PT. Timur Mandiri Akuakultur consists of sales revenue and residual value.

a) Income

Sales revenue in the catfish enlargement business is about three months. Within one year of its business, PT. Timur Mandiri Akuakultur can achieve four production cycles. From the results of observations and interviews conducted on catfish enlargement business PT. Timur Mandiri Akuakultur has 38 units of round tarpaulin ponds with a diameter of 3 meters. For production targets on catfish enlargement harvest, PT. Timur Mandiri Akuakultur is 3000-4000 Kg per cycle. The selling price of catfish consumption on average is Rp 20,000 per kilogram. The selling price has changed from year 1 to year 4 with a production cycle of four times per year. Revenue from the sale of catfish PT. Timur Mandiri Akuakultur can be seen in Table 3.

Table 3
Catfish Enlargement Business Income PT. Timur Mandiri Akuakultur

Harvest	Total Production (kg)	Unit Price (Rp/Kg)	Value (Rp)
1	6905	18.000	124.290.000
2	6946	18.000	125.028.000
3	5470	18.000	98.460.000
4	6740	18.000	121.320.000
5	3479	20.000	69.580.000
6	4978	19.000	94.582.000
7	5290	18.000	95.220.000
8	3989	19.000	75.791.000
9	4257	19.000	80.883.000
10	3084	20.000	61.680.000
11	3391	19.000	64.429.000
12	3220	18.000	57.960.000
13	721	20.000	14.420.000
14	1153	20.000	23.060.000
15	753	20.000	15.060.000
16	1570	20.000	31.400.000
17	1138	20.000	22.760.000
18	880	20.000	17.600.000

b) Residual Value

Residual value is the value of goods or equipment that are not used up during the business. The residual value is an additional benefit for the business. The cost of investment costs in catfish rearing business that does not run out during the life of the business.

Machinery, and buildings in the form of pool construction are residual values in PT. Timur Mandiri Akuakultur assuming the price of a borehole water pump is Rp.2,440,000, the economic age is 8 years. There is a depreciation of Rp.305,000 per year, so that the residual value for 5 years of use is Rp.915,000. While the assumption of the Aerator price is Rp.10,800,000, the economic life is 8 years. There is a depreciation of Rp.1,350,000 per year, the residual value for 5 years of use is Rp.4,050,000. For pool construction, the initial capital of manufacture is Rp. 200,000,000, the economic life is 10 years. The residual value for pool construction during 5 years of use is IDR 100,000,000 with annual depreciation of IDR 20,000,000. The assumed price of water reservoir Rp.11.070.000, economic life 10 years. There was a depreciation of Rp.1,107,000, the residual value for 5 years of use was Rp.5,720,000. Table 4 provides data information on the residual value of machinery and construction in PT. Timur Mandiri Akuakultur.

Table 4
Residual Value of Catfish Enlargement Business PT. Timur Mandiri Akuakultur

No	Description	Value	EU (Thn)	Annual Depreciation (Rp)	Remaining (Rp)
1	Pool Construction	114.000.000	10	11.400.000	57.000.000
2	Tandon air 2200 lt	11.070.000	10	1.107.000	5.720.000
3	Aerator Resun Lp 100	10.800.000	8	1.350.000	4.050.000
4	Borehole water pump	2.440.000	8	305.000	915.000
		Total			67.685.000

Source : Primary Data, 2023

Production Current (Outflow)

Outflow is the cost incurred or the flow of expenses used to finance the business carried out or the business run. In the catfish enlargement business PT. Timur Mandiri Akuakultur outflows include investment costs, fixed costs and variable costs. Cost flows or expenses reflect expenses incurred over the life of the project.

a) Investment Cost

Investment costs are costs incurred at the beginning of business activities or the beginning of a period and at a certain time to obtain benefits several periods later. Investment costs can also be incurred several years after the business is running. In this catfish enlargement business, investment was made at the beginning of its establishment. The cost of investment in catfish rearing business can be seen in Table 5.

Table 5
Investment Costs of Catfish Enlargement Business PT. Timur Mandiri Akuakultur

No	Description	Sum	Unit	EU	Unit Value (Rp)	Value (Rp)	Depreciation per month	Depreciation per cycle
1	Land	700	M^2		300.000	1.500.000		
2	Borehole water pump	1	unit	8	2.440.000	2.440.000	24.000	72.000
3	Water reservoir 2200 liter	3	Buah	10	3.690.000	11.070.000	92.250	276.750
4	Pickup car	1	Unit	4	30.750.000	30.750.000	650.000	1.950.000
5	Pool Construction	38	Unit	10	3.000.000	114.000.000	950.000	2.850.000
6	Digital scales	1	unit	5	300.000	300.000	5.000	15.000
7	Hanging scales	1	Unit	5	250.000	250.000	4.100	12.300
8	Grading bucket seed	10	Buah	3	35.000	350.000	10.000	30.000
9	Grading bucket fish	3	Buah	3	50.000	150.000	4.100	12.300
10	Small fish net	4	Unit	3	14.000	56.000	1.500	4.500

11	Large fish net	2	Unit	3	20.000	40.000	1.000	3.000
12	Container tub	7	Buah	3	25.000	175.000	5.000	15.000
13	Baskom bucket	3	Buah	3	45.000	135.000	4.000	12.000
14	Plastic barrel 200ml	7	Unit	3	250.000	1.750.000	49.000	147.000
15	Aerator Resun Lp 100	6	Buah	8	1.800.000	10.800.000	112.500	337.500
16	pH analyzers	1	Buah	4	335.000	335.000	7.000	21.000
17	Ammonia analyzer	1	Buah	4	1.240.000	1.240.000	25.800	77.400
Total						175.341.000		5.835.750

Source : Primary Data, 2023

Based on Table 5 shows the amount of initial investment used for catfish rearing in PT. Timur Mandiri Akuakultur amounted to Rp 175,341,000,-. The largest investment value is in making a pool, which is Rp.114,000,000,-. Meanwhile, the total depreciation cost per cycle is Rp.5,835,750

b) Fixed Costs

Fixed costs are the total costs that must be incurred during one production cycle (3 months) with the presence or absence of production carried out and do not change even though the amount of production and sales of production results change. Fixed costs incurred by catfish enlargement business PT. Timur Mandiri Akuakultur includes electricity subscriptions, employee wages, maintenance costs and depreciation costs. Description of fixed costs on catfish enlargement business PT. Timur Mandiri Akuakultur can be seen in Table 6.

Table 6
Fixed Costs of Catfish Enlargement Business PT. Timur Mandiri Akuakultur

No	Description (2019-2022 2nd cycle)	Cost (Rp/3 months)
1	Electricity Rp.100.000,-/month	300.000
2	Fuel Rp.50.000,-/month	150.000
3	Employee 2 Rp.1.500.000,-/person/month	9.000.000
4	Maintenance Cost	300.000
5	Depreciation	5.835.750
Total		15.585.750

Source : Primary Data, 2023

c) Variable Costs

Variable costs are costs that must be incurred along with changes in production, decreasing or increasing production volumes. Variable costs will change if the volume of production changes. Variable costs in catfish enlargement business PT. Timur Mandiri Akuakultur is issued once a production cycle or every 3 months. For variable costs, an average is taken because each cycle of production results is different. Description of the

variable costs of catfish enlargement business PT. Timur Mandiri Akuakultur can be seen in Table 7.

Table 7
Variable Costs of Catfish Enlargement Business PT. Timur Mandiri Akuakultur

Cycle	Description	Unit	Price	Sum	Cost (Rp)	Cycle
1	Seeds	Tail	120	76.000	9.565.000	83.537.600
	Feed	Kg	10.800	6.840	73.872.600	
	Medicines	-	100.000	-	100.000	
2	Seeds	Tail	120	76.000	9.565.000	83.537.600
	Feed	kg	10.800	7.182	73.872.600	
	Medicines	-	100.000	-	100.000	
3	Seeds	Tail	120	64.000	7.680.000	69.888.004
	Feed	Kg	10.800	5.760	62.208.000	
	Medicines	-	100.000	-	100.00	
4	Seeds	Tail	120	76.000	9.565.000	83.537.600
	Feed	Kg	10.800	7.182	73.872.600	
	Medicines	-	100.000	-	100.000	
5	Seeds	Tail	120	40.000	4.800.000	43.680.004
	Feed	Kg	10.800	3.600	38.880.000	
	Medicines	-	100.000	-	100.00	
6	Seeds	Tail	120	58.000	6.960.000	63.336.004
	Feed	Kg	10.800	5.220	56.376.000	
	Medicines	-	100.000	-	100.00	
7	Seeds	Tail	120	60.000	7.200.000	65.520.004
	Feed	Kg	10.800	5.400	58.320.000	
	Medicines	-	100.000	-	100.00	
8	Seeds	Tail	120	44.000	5.280.000	48.048.004
	Feed	Kg	10.800	3.960	42.768.000	
	Medicines	-	100.000	-	100.00	
9	Seeds	Tail	120	48.000	5.760.000	52.416.004
	Feed	Kg	10.800	4.320	46.656.000	
	Medicines	-	100.000	-	100.00	
10	Seeds	Tail	120	38.000	4.560.000	41.496.004
	Feed	Kg	10.800	3.420	36.936.000	
	Medicines	-	100.000	-	100.00	
11	Seeds	Tail	120	40.000	4.800.000	43.680.004
	Feed	Kg	10.800	3.600	38.880.000	
	Medicines	-	100.000	-	100.00	
12	Seeds	Tail	120	42.000	5.040.000	45.864.004
	Feed	Kg	10.800	3.780	40.824.000	
	Medicines	-	100.000	-	100.00	
13	Seeds	Tail	120	10.000	1.200.000	12.450.244
	Feed	Kg	10.800	900	9.720.000	
	Medicines	-	100.000	-	100.00	
	Feed pf 500 Seeds (2-3cm)	Kg	20.000	12	240.000	
	Feed pf 800 Seeds (4-9cm)	Kg	19.200	67,2	1.290.240	
14	Seeds	Tail	120	20.000	2.400.000	24.517.924
	Feed	Kg	10.800	1.800	19.440.000	
	Medicines	-	100.000	-	100.00	
	Feed pf 500	Kg	20.000	21	420.000	

	Seeds (2-3cm)					
15	Feed pf 800 Seeds (4-9cm)	Kg	19.200	117,6	2.257.920	18.707.044
	Seeds	Tail	120	12.000	1.440.000	
	Feed	Kg	12.800	1.080	13.824.000	
	Medicines	-	100.000	-	100.00	
	Feed pf 500 Seeds (2-3cm)	Kg	20.000	27	540.000	
	Feed pf 800 Seeds (4-9cm)	Kg	19.200	151,2	2.903.040	
16	Seeds	Tail	120	22.000	2.640.000	27.949.600
	Feed	Kg	12.800	1.980	21.384.000	
	Medicines	-	100.000	-	100.000	
	Feed pf 500 Seeds (2-3cm)	Kg	20.000	30	600.000	
	Feed pf 800 Seeds (4-9cm)	Kg	19.200	168	3.225.600	
17	Seeds	Tail	120	18.000	2.160.000	27.586.720
	Feed	Kg	12.800	1.620	20.736.000	
	Medicines	-	100.000	-	100.000	
	Feed pf 500 Seeds (2-3cm)	Kg	20.000	36	720.000	
	Feed pf 800 Seeds (4-9cm)	Kg	19.200	201,6	3.870.720	
18	Seeds	Tail	120	12.000	1.440.000	20.662.240
	Feed	Kg	12.800	1.080	13.824.000	
	Medicines	-	100.000	-	100.000	
	Feed pf 500 Seeds (2-3cm)	Kg	20.000	42	840.000	
	Feed pf 800 Seeds (4-9cm)	Kg	19.200	232,2	4.458.240	
19	Seeds	Tail	120	20.000	2.400.000	
	Feed	Kg	10.800	1.800	19.440.000	
	Medicines	-	100.000	-	100.00	
	Feed pf 500 Seeds (2-3cm)	Kg	20.000	21	420.000	
	Feed pf 800 Seeds (4-9cm)	Kg	19.200	117,6	2.257.920	

Source : Primary Data, 2023

Based on Table 7, in mid-2022 (cycle 13) there is a new business, namely Catfish Fishing, the price of 1 catfish measuring 7-9 cm is Rp.1,500 / head. From the data above, it is also known that the price of feed has increased in price from 1Kg for Rp.10,800 to

1Kg Rp.12,800 at PT. Timur Mandiri Akuakultur average dose of catfish seed feeding, size 2-3 cm 200 gr/day every 1000 fry for 15 days, size 4-9 cm 400 gr/day every 1000 fry for 6 weeks (42 days).

Feasibility Analysis of Investment Criteria

In analyzing the financial investment criteria for the round tarpaulin pond catfish enlargement business PT. Timur Mandiri Akuakultur used to assess is Net Present Value (NPV), Net B/C Ratio, Internal Rate Return (IRR), and Payback Period (PP). Based on the results of the analysis carried out, the results of the investment criteria for catfish enlargement PT. Timur Mandiri Akuakultur which can be seen in Table 8.

Table 8
Financial Feasibility of Catfish Enlargement Business PT. Timur Mandiri Akuakultur

No	Investment Criteria	Result
1	Net Present Value (NPV)	Rp.461.928.000,-
2	Net Benefit And Cost Ratio (Net B/C)	1,056
3	Internal Rate Return (IRR)	5,45%
4	Payback period (PP)	13

Source : Primary Data, 2023

From the value of the four investment criteria, it was concluded that the catfish enlargement business of round tarpaulin ponds PT. Timur Mandiri Akuakultur is feasible to run and develop with an NPV value of > 0, which is Rp.461,928,000,-. The NPV value shows that the net benefit obtained from the catfish enlargement business of PT. Timur Mandiri Akuakultur over the life of the project. Judging from the Net B/C results obtained of 1,056, this business is still feasible to run because Net B/C > 1. Net B/C= 1,056 indicates that every Rp 1 of costs incurred will result in Rp 1,056 of net benefits over the life of the project. The IRR value obtained from the financial analysis of this catfish rearing business is 5.45% for three months of production cycles. This value is greater than the applicable discount rate of 1.5%. This shows that the catfish enlargement business is feasible to run with an internal rate of return of 5.45%. While the length of time needed for the return of all investment costs is 3 years or 13 production cycles.

CONCLUSION AND SUGGESTIONS

Business pattern developed by PT. Timur Mandiri Akuakultur is still traditional, where the marketing carried out is the collecting traders who act as buyers coming to the location. The results of the analysis on non-financial aspects, namely market and marketing aspects, technical aspects, management and organizational aspects, economic and social aspects, environmental aspects and legality aspects, catfish enlargement business PT. Timur Mandiri Akuakultur is still feasible to be developed and run. The financial aspect analysis state that PT Timur Mandiri Aquaculture's catfish enlargement business is still feasible to be developed and run. This is based on the value of the investment criteria NPV of Rp.462,000,000 > 1, IRR value of 5.45% > of the applicable discount rate (1.5%), Net B/C of 1,056 > 1 and PP for 3 years.

Catfish enlargement business PT. Timur Mandiri Akuakultur must be able to maintain the continuity of catfish rearing production so that collectors are not disturbed by catfish marketing problems.

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