

# Feasibility Analysis of Lobster (*Panulirus* sp) Aquaculture Business in The Pokdakan Gisman Jaya Group, Penajam Sub-District, Penajam Paser Utara Regency

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## ABSTRACT

The purpose of this study was to determine the feasibility of the business in lobster shrimp farming (*Panulirus* sp) and to determine the level of costs and profit levels of lobster shrimp farming (*Panulirus* sp) in the Pokdakan Gisman Jaya Group, Penajam District, North Penajam Paser Regency. The sampling method used in this study is the saturated sample method. Data analysis uses methods of production cost as well as profit analysis, business feasibility analysis and qualitative descriptive analysis using a likert scale. According to the results of the cost analysis incurred is IDR 26,921,133 respondent/production, profit is IDR.41.114.337/respondent/production, R/C value of 2.82, payback period of 0.654 times production.

## INTRODUCTION

The regency of Penajam Paser Utara is one of the regions in East Kalimantan Province that possesses economic potential and advantages in terms of agricultural resources, fisheries, and tourism. The position of Penajam Paser Utara is strategically positioned as a gateway for both sea and land transportation, as well as a route for the movement of goods and services between East Kalimantan and South Kalimantan provinces. The regency covers an area of 3,333.06 km<sup>2</sup>, including 3,060.82 km<sup>2</sup> of land area and 272.24 km<sup>2</sup> of marine area. In terms of topography, Penajam Paser Utara ranges in elevation from 0 to 500 meters above sea level. The lowest elevation is found around the estuary of rivers flowing through Penajam Paser Utara. The regency's terrain is dominated by hills and plains in the western part (BPS Penajam Paser Utara 2020).

Aquaculture has potential for development in the region, comprising both freshwater and marine aquaculture. Freshwater aquaculture can utilize various water bodies such as rivers, lakes, reservoirs, marshes, and other water bodies. Marine aquaculture also holds promise for development. One of the alternative aquatic commodities for fisheries businesses in the Penajam sub-district is lobster aquaculture. In the Penajam sub-district, there are several groups involved in aquaculture activities, and among them is the Pokdakan Gisman Jaya Fish Farming Group, which engages in lobster aquaculture along with other activities such as the cultivation of groupers. The group's lobster aquaculture includes pearl lobsters and bamboo lobsters.

Lobster nursery techniques involve two methods: cage culture in floating net cages and controlled pond culture on land, either indoors or outdoors. Cage culture in floating net cages has advantages such as

relatively lower investment and operational costs, environmental control, predator protection, and optimal feed control. On the other hand, controlled pond culture on land requires higher investment in facility construction (building, ponds, equipment, water and air pumps), operational costs, and labor. Facility and equipment damage can lead to significant issues. However, this technique offers better control over the cultured animals and more precise outcomes (Setyono and Hasanuddin, 1997).

The lobster seeds cultivated by the Pokdakan Gisman Jaya Fish Farming Group are directly obtained from local fishermen and lobster seed breeders in Balikpapan. The group's production has slightly decreased due to the reduction in the number of cages, lobster seed production, and the impact of the COVID-19 pandemic, which resulted in reduced production and sales for the group. Given this context, research is needed to analyze the feasibility of lobster aquaculture business in the Pokdakan Gisman Jaya Fish Farming Group in the Penajam sub-district, Penajam Paser Utara regency.

The objective of this research is to assess the feasibility of lobster aquaculture business in the Pokdakan Gisman Jaya Fish Farming Group and to determine the cost and profit levels of the lobster aquaculture business in the Penajam sub-district, Penajam Paser Utara regency.

## METHODOLOGY

This research was conducted in the Pokdakan Gisman Jaya Fish Farming Group, Penajam sub-district, Penajam Paser Utara regency, over a period of 7 months starting from January 2022 to June 2022. The data used for this study consists of primary data and secondary data. Primary data was collected directly through interviews with shrimp pond farmers, including respondent identities, business duration, fixed and operational costs, selling prices, production quantities, and business issues. On the other hand, secondary data was gathered from previous research, the proposal of the Pokdakan Gisman Jaya Fish Farming Group, and data from the Department of Marine and Fisheries of Penajam Paser Utara regency.

### Sampling Method

The population of this research is the Gisman Jaya Fish Farmers Group. A sample is a part of the population (a portion or representation that is studied). The sample within the Gisman Jaya Fish Farmers Group consists of 3 members, thus the sampling method used in this research is the Saturated Sampling method (Non-Probability Sampling). The Saturated Sampling (Census) method is used to identify active members of the Gisman Jaya Fish Farmers Group engaged in lobster farming activities. The Saturated Sampling (Census) method is employed when the population size is small, less than 30 individuals (Supriyanto and Machfudz, 2010).

### Data Analysis Method

The data analysis that will be used to address the research objectives is as follows:

#### 1. Business Cost Analysis

According to Boediono (2002), in terms of cost nature related to output levels, production costs can be divided into:

##### a. Total Fixed Cost (TFC)

To calculate depreciation cost, it can be computed using the formula as follows:

$$\text{Def} = (P \times Q) / \text{Technical Life}$$

Where:

Def: Depreciation of equipment (Rp/production)

P (Price): Price (IDR)

Q (Quantity): Quantity / Unit

*b. Total Variable Cost (TVC)*

Calculation formula:

$$\text{TVC} = \text{Price of goods} \times \text{Quantity of goods}$$

*c. Total Cost (TC)*

Mathematically, it can be written as follows:

$$\text{TC} = \text{TFC} + \text{TVC}$$

Where:

TC (Total Cost): Total Cost (IDR/production)

TFC (Total Fixed Cost): Total Fixed Cost (IDR/production)

TVC (Total Variable Cost): Total Variable Cost (IDR/production)

2. Revenue

Mathematically, it can be written as follows (Boediono, 2002):

$$\text{TR} = \text{P} \cdot \text{Q}$$

Where:

TR (Total Revenue): Total Revenue (Rp/production)

P (Price): Price (IDR)

Q (Quantity): Production Quantity (Kg)

3. Profit

Mathematically, it can be written as follows (Soeharno, 2007):

$$\pi = \text{TR} - \text{TC}$$

Where:

$\pi$ : Business Profit (Rp/production)

TR (Total Revenue): Total Revenue (IDR/production)

TC (Total Cost): Total Cost (IDR/production)

4. Business Feasibility Analysis

*a. Revenue to Cost (R/C Ratio)*

The formula used to calculate the R/C ratio value is as follows (Suratiah, 2015):

$$\text{RCR} = \text{TR} / \text{TC}$$

Where:

RCR: Ratio of Total Revenue to Total Cost

TR (Total Revenue): Total Revenue (IDR/production)

TC (Total Cost): Total Cost (IDR/production)

*b. Payback Period*

The formula for Payback Period is as follows (Umar, 2009):

$$\text{Payback Period} = (\text{Total Investment}) / \text{Profit}$$

With criteria:

- 1) Value of Payback period < 3 years, the business capital return is categorized as fast
- 2) Value of Payback period 3-5 years, the business capital return is categorized as moderate
- 3) Value of Payback period > 5 years, the business capital return is categorized as slow

## RESULT AND DISCUSSION

### General Description of the Area

The research location is in the Gisman Jaya Fish Farmers Group in Penajam Sub-district. Penajam Sub-district has an area of 1,230.44 square kilometers. It consists of 19 urban villages and 4 rural villages, one of which is the Penajam Urban Village. Penajam Urban Village covers an area of 46.23 square kilometers, accounting for 3.76% of the total area of Penajam Sub-district. Penajam Urban Village is directly adjacent to Balikpapan Bay, which influences the livelihoods of its residents. The community's occupations are often related to the sea, such as working in maritime transportation (speedboat and klotok boat drivers), cargo handling on klotok boats, fishing, and fish farming. The population of Penajam Urban Village is 8,403 people, and it covers an area of 46.23 km<sup>2</sup>. In terms of religion, the population of Penajam Urban Village consists of 96.70% Muslims and 3.3% Christians.

### Profile of Gisman Jaya Fish Farmers Group

Gisman Jaya Fish Farmers Group is an initiative led by local fishermen engaged in the cultivation of fish and lobster. Additionally, the group is involved in marketing activities. The establishment of Gisman Jaya Fish Farmers Group was initiated by Mr. Basrun, located at Jl. Raden Sukma, Penajam Sub-district. The group was first established in 2010 under the leadership of Mr. Basrun, aiming to cultivate the live catch of local fishermen. Initially, before the formation of the group, individual fishermen were independently engaged in fish farming, without lobster cultivation. Over a span of 3 years (from 2007 to 2010), individual farming efforts were carried out. However, Mr. Basrun, as the chairman, conceived the idea of forming a group to enhance the efficiency of fish farming among fishermen and improve the effectiveness of its sales, while also fostering the growth of fish farming. After 2 more years (specifically in 2012), Gisman Jaya Fish Farmers Group was officially established. The group ventured into lobster cultivation, motivated by market opportunities, particularly in Balikpapan.

### Organizational Structure of the Gisman Jaya Pokdakan Group

The Gisman Jaya Fish Farmers Group is managed by a community of fishermen consisting of 10 individuals, including the group leader. The group leader of the Gisman Jaya Fish Farmers Group in Penajam District is Mr. Basrun. The group leader holds full responsibility for the production process and group activities related to aquaculture. The secretary in the management structure of the Gisman Jaya Fish Farmers Group is Mr. Pangerang. In this role, he assists with administrative tasks related to the business and monitors the quality of production and its results. The sales department is responsible for delivering the cultivated products to markets and agents. Mr. Limpi is in charge of the sales department. The treasurer

for the group is Mr. M. Ridwan, and the other members include Mr. Mashuring, Agus, Jumansyah, Erwin, Abdul Gudul, and H. Abdul Hamid.

**Characteristics of Respondents**

The focus of this research is directed towards the members of Kelompok Pokdakan Gisman Jaya who are exclusively engaged in lobster farming. The total number of members in the Gisman Jaya farming group is 10, including the group leader. For this study, a sample of 3 members from the entire group, including the leader, will be selected as respondents.

**Costs and Profits of Lobster Farming**

The total investment cost is IDR 80,763,400 per production, with an average of IDR 26,921,133 per respondent/production. The total fixed cost (TFC) is IDR 2,077,989 per production, with an average of IDR 692,663 per respondent/production. The total variable cost (TVC) amounts to IDR 65,635,000 per production, with an average of IDR 21,878,333 per respondent/production. The total cost is IDR 67,766,989 per production, with an average of IDR 22,588,996 per respondent/production. The total revenue obtained is IDR 191,200,000 per production, with an average revenue of IDR 63,733,333 per respondent/production. The profit is IDR 123,433,011 per production, with an average of IDR 41,114,337 per respondent/production from the 3 respondents.

**Analysis of Feasibility of Lobster Farming Business**

The results of the feasibility analysis calculation for lobster farming business in the "Kelompok Pokdakan Gisman Jaya," which includes the calculation of R/C ratio and payback period, can be seen in Table 1 below.

Table 1. Feasibility Analysis Calculation

No	Indicator	Value	Status
1	<i>R/C Ratio</i>	2,82 > 1	Qualified
2	<i>Payback Period</i>	0,654 Production (6 months 5 days 4 hours)	Qualified

Based on the calculation results of lobster farming business in Kelompok Pokdakan Gisman Jaya, an R/C ratio of 2.82 is obtained, which means that for every 1,000 rupiah of cost spent on lobster farming, there is a return of 2,820 rupiah in revenue. The Payback Period analysis for lobster farming business yields a result of 0.654 production cycles, indicating that all investments made in the farming venture will be recovered within a period of 6 months, 5 days, and 4 hours.

**CONCLUSION**

1. The lobster cultivation business in Kelompok Pokdakan Gisman Jaya is currently deemed viable to continue based on the R/C ratio of 2.82 and a Payback Period of 0.654 in production units.
2. The lobster cultivation business in Kelompok Pokdakan Gisman Jaya incurs an average cost of IDR 22,588,996 per production unit and generates an average profit of IDR 41,114,337 per production unit.

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