



Financial Analysis of Purse Seine Fishery Business at the Kasiwa Landing and Fish Management Base (PPI), Mamuju Regency, West Sulawesi Province

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ARTICLE INFO

Keywords: Financial Analysis, Business Feasibility, NPV, PPI Kasiwa, Purse Seine

Received: 3 May

Revised: 25 June

Accepted: 26 July

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ABSTRACT

Purse seine fishing is a capital-intensive business that is developing in the Kasiwa Landing and Fish Management Base (PPI), Mamuju Regency, so its feasibility needs to be assessed financially. This study aims to analyze the amount of investment and operational costs, revenue and profits, business feasibility, and financial feasibility of the purse seine fishing business in the Kasiwa PPI. The study uses a descriptive quantitative approach with a survey method and case studies of 3 active purse seine business units that were determined purposively. Data were analyzed using business analysis (costs, revenues, profits, R/C Ratio, Return on Investment, Break Even Point, and Payback Period) and investment criteria analysis (Net Present Value, Net Benefit Cost Ratio, and Internal Rate of Return) at an economic life of 10 years with a discount rate of 12%. The results of the study showed a total investment cost of Rp822,600,000, total operational costs of Rp1,735,875,000 per year, revenue of Rp2,250,000,000 per year, and profit of Rp514,125,000 per year. The business analysis obtained an R/C Ratio of 1.30; ROI of 62.5%; Payback Period of 1.6 years; BEP production of 36,132 kg; and BEP price of Rp19,288/kg. The investment criteria analysis obtained a positive NPV of Rp2,654,990,000; Net B/C of 4.23; and an IRR of 74.5% which is much greater than the discount rate of 12%. Based on all these criteria, the purse seine fishing business at PPI Kasiwa is declared profitable and feasible to develop. It is recommended to strengthen access to capital, fuel cost efficiency, and improve the quality of catches to maintain business sustainability

INTRODUCTION

As a maritime nation, Indonesia has significant potential for capture fisheries, making the fisheries sector a key pillar of food security and a source of income for coastal communities. Purse seine fishing gear is a productive fishing gear for catching pelagic fish such as tuna, skipjack tuna, scad, and mackerel. High national capture fisheries production, with tuna alone reaching 681,068 tons in 2024 (Ministry of Maritime Affairs and Fisheries, 2024), underscores the strategic role of pelagic fishing in supporting the economy of coastal communities, including in Mamuju Regency, West Sulawesi Province. The contribution of pelagic capture fisheries to the regional economies of Sulawesi, Maluku, and Papua has also shown an increasing trend in recent years (Susanto & Satriawan, 2026).

Mamuju Regency has a productive coastal area, with the Kasiwa Fish Landing and Management Base (PPI) serving as a catch landing center. Some fishermen at the PPI Kasiwa operate purse seine vessels, a capital-intensive business requiring significant investment in vessels, engines, and nets, as well as high operational costs, particularly fuel. These substantial capital and costs necessitate a feasibility analysis to ensure the investment truly yields a reasonable return for both business owners and fishermen (Arumtyas et al., 2023).

Financial analysis is an essential tool for assessing the economic feasibility of operating and developing a capture fisheries business. This analysis generally utilizes business analysis criteria such as the R/C Ratio, Return on Investment (ROI), Break-Even Point (BEP), and Payback Period (PP), as well as discounted investment criteria such as Net Present Value (NPV), Net Benefit Cost Ratio (Net B/C), and Internal Rate of Return (IRR) (Dollu et al., 2022; Nasution, 2024). Good purse seine fishing gear performance from a technical, biological, social, and economic perspective is a prerequisite for achieving sustainable business feasibility (Hamjan, 2024).

Several previous studies have shown that purse seine fishing is generally financially viable, such as in Prigi Trenggalek Waters (Ramadhan et al., 2023; Nasution, 2024), Kokar Waters, Alor Regency (Dollu et al., 2022), Sadeng Fishing Port (Manik, 2025), and pelagic fisheries in Sulawesi (Yasir Haya et al., 2026; Dedi, 2025). However, studies specifically analyzing the financial feasibility of purse seine fishing at Kasiwa Fishing Port, Mamuju Regency, are still very limited. This is the novelty of this research.

Based on the description, this study aims to answer the following questions: (1) how much is the investment and operational costs of the purse seine business at PPI Kasiwa; (2) how much is the income and profit of the business; (3) how is the feasibility of the business based on the R/C Ratio, ROI, BEP, and Payback Period; and (4) how is the financial feasibility based on the

investment criteria of NPV, Net B/C, and IRR. The results of the study are expected to be a reference for fishermen, business owners, financial institutions, and stakeholders in developing a viable and sustainable capture fisheries business.

RESEARCH METHODS

Time and Place

The research was conducted at the Kasiwa Fish Landing and Management Base (PPI), Mamuju Regency, West Sulawesi Province, in April–June 2026. The location was chosen purposively with the consideration that the Kasiwa PPI is one of the pelagic fish landing centers and the base of purse seine vessel operations in the coastal area of Mamuju Regency.

Types and Approaches of Research

This research uses a descriptive quantitative approach with survey methods and case studies of purse seine fishing businesses. This approach is used to describe the cost structure, revenue, and profit, and to systematically assess business feasibility and financial viability based on field data.

Population and Sample

The research population is all purse seine business units that are actively operating and landing results the arrest at PPI Kasiwa as many as 78 ships. Determination respondents done use Slovin's formula so that , sampling against 65 units Active purse seine businesses with representative operational characteristics (vessel size, number of crew members, and relatively uniform trip patterns). The values presented in this study are the average per business unit per year.

Data Collection Sources and Techniques

The data consists of primary and secondary data. Primary data were obtained through field observations, structured questionnaire-assisted interviews with ship owners/masters and crew members regarding investment, operational costs, production, and selling prices, as well as documentation. Secondary data were obtained from the Kasiwa PPI management, the Maritime Affairs and Fisheries Service, the Mamuju Regency Central Statistics Agency (2024), and publications. relevant scientific.

Data Analysis Techniques

Data were analyzed using business analysis and financial analysis (investment criteria). The business analysis includes total costs, revenues, profits, R/C Ratio, ROI, BEP, and Payback Period. The financial analysis used discounted investment criteria (NPV, Net B/C, and IRR) for a 10-year business life. The discount rate was set at 12% per year, based on the average prevailing commercial lending interest rate, reflecting the opportunity cost of capital if funds were invested in this business compared to other investment alternatives. The formula used is as follows:

- a. Total cost: $TC = TFC + TVC$, where TFC = fixed costs and TVC = variable costs.
- b. Revenue: $TR = P \times Q$, where P = selling price and Q = production quantity.
- c. Profit: $\pi = TR - TC$.
- d. R/C Ratio = TR / TC ; a business is profitable if $R/C > 1$.
- e. $ROI = (\pi / \text{Total Investment}) \times 100\%$.
- f. Payback Period (PP) = $(\text{Total Investment} / \text{Annual net profit}) \times 1 \text{ year}$.
- g. $BEP (Rp) = TFC / (1 - TVC/TR)$; $BEP (\text{unit}) = TFC / (P - \text{variable cost per unit})$.
- h. $NPV = \sum (B_t - C_t) / (1 + i)^t - I_0$; a business is feasible if $NPV > 0$.
- i. Net B/C = $\sum PV \text{ net benefit positive} / \sum PV \text{ net benefit negative}$; feasible if $\text{Net B/C} > 1$.
- j. $IRR = i_1 + [NPV_1 / (NPV_1 - NPV_2)] \times (i_2 - i_1)$; feasible if $IRR > \text{discount rate}$.

RESULTS AND DISCUSSION

1. Purse Seine Business Profile at PPI Kasiwa

The purse seine fishing business at the Kasiwa PPI generally utilizes vessels measuring around 28 GT, operated by a crew of 12–13 people, under a profit-sharing system. Fishing operations range from one-day fishing trips to several days, utilizing fishing equipment such as lights and fish aggregating devices (FADs). The catch is dominated by small and medium-sized pelagic fish, particularly tuna (*Euthynnus affinis*), skipjack tuna, scad, and mackerel, which are then landed and marketed through the Kasiwa PPI. Each business unit conducts approximately 120 trips annually, with an average total production of 90,000 kg per year and an average selling price of IDR 25,000/kg.

2. Investment Costs (Fixed Capital)

Investment costs represent fixed capital expenditures at the start of a business for the procurement of production facilities. The total investment cost for one purse seine business unit at PPI Kasiwa is Rp822,600,000, detailed in Table 1. Depreciation is calculated using the straight-line method without residual value based on the economic life of each component.

Table 1. Investment Costs (Fixed Capital) of Purse Seine Business at PPI Kasiwa

Component Investment	Value (Rp)	Economic Life (years)	Depreciation (Rp/year)
Ship (±28 GT)	350,000,000	15	23,333,333
Main engine & auxiliary engine	180,000,000	10	18,000,000
Purse seine net	210,000,000	5	42,000,000
Lights & generators	40,000,000	5	8,000,000
fish aggregating device	30,000,000	4	7,500,000
Assistive devices (GPS, fish finder)	12,600,000	5	2,520,000
Total	822,600,000	-	101,353,333

Source: Processed Primary Data (2026)

3. Operational Costs (Fixed Costs and Variable Costs)

Operating costs consist of fixed and variable costs. Fixed costs include depreciation, maintenance, and licensing and administration. Variable costs are dominated by fuel (diesel) and crew wages/profit sharing, which are calculated based on a profit-sharing system based on business revenue. Details of operating costs per year are presented in Table 2.

Table 2. Operating Costs of a Purse Seine Business Per Year

Cost Components	Value (Rp/year)
A. Fixed Costs	
Depreciation (ships, engines, fishing gear)	101,353,333
Maintenance/care/repair	231,500,000
Licensing & administration	12,000,000
Fixed Cost Subtotal	344,853,333
B. Variable Costs	
Fuel (diesel)	340,000,000
Ice & salt	113,000,000
Supplies/rations	30,000,000
Auction fees & costs	25,000,000
ABK wages/profit sharing	883,021,667
Subtotal Variable Costs	1,391,021,667
Total Operating Costs	1,735,875,000

Source: Processed Primary Data (2026)

4. Business Income and Profit

Business revenue is obtained by multiplying total production by the average selling price, which is $90,000 \text{ kg} \times \text{Rp}25,000/\text{kg} = \text{Rp}2,250,000,000$ per year. Business profit is the difference between revenue and total operational costs, which is $\text{Rp}514,125,000$ per year (Table 3). The positive profit value indicates that the purse seine business at PPI Kasiwa is able to provide a decent net income for the business owner and fishermen.

Table 3. Revenue and Profits of the Purse Seine Business Per Year

Description	Value (Rp/year)
Receipt ($90,000 \text{ kg} \times \text{Rp. } 25,000$)	2,250,000,000
Total Operating Costs	1,735,875,000
Profit (II)	514,125,000

Source: Processed Primary Data (2026)

5. Business Feasibility Analysis (R/C Ratio, ROI, BEP, Payback Period)

Based on the results of the business analysis, the R/C Ratio was 1.30, meaning that every $\text{Rp}1.00$ of costs incurred generates $\text{Rp}1.30$ in revenue, making the business profitable ($R/C > 1$). The ROI value of 62.5% indicates a high rate of return on investment, while the Payback Period of 1.6 years (± 1 year 7 months) indicates that the investment capital can be returned in a relatively short time.

The BEP production value of 36,132 kg and the BEP price of Rp19,288/kg are far below the production realization (90,000 kg) and selling price (Rp25,000/kg), so the business is in a profitable condition (Table 4). These findings are in line with the results of research on similar businesses that state that purse seine businesses are economically feasible with an R/C value > 1 (Dollu et al., 2022; Ramadhan et al., 2023).

Table 4. Results of the Feasibility Analysis of the Purse Seine Business

Criteria	Mark	Eligibility Standards	Information
R/C Ratio	1.30	> 1	Worthy
ROI	62.5%	The bigger the better	Worthy
Payback Period	1.6 years	Shorter than the business age	Worthy
BEP Production	36,132 kg	< production (90,000 kg)	Worthy
Break Even Price	Rp. 19,288/kg	< selling price (Rp. 25,000)	Worthy

Source: Processed Primary Data (2026)

6. Financial Analysis (NPV, Net B/C, IRR)

The investment criteria analysis was conducted on a 10-year business life with a discount rate of 12% per year and an annual net cash flow of Rp615,478,333 (profit of Rp514,125,000 plus depreciation of Rp101,353,333). The analysis results obtained a positive NPV of Rp2,654,990,000, a Net B/C of 4.23 (> 1), and an IRR of 74.5%, which is much greater than the 12% discount rate (Table 5). These three criteria consistently indicate that the purse seine business at PPI Kasiwa is financially feasible to run and develop. These results reinforce the findings of previous studies that concluded the purse seine business is feasible based on discounted investment criteria (Nasution, 2024; Manik, 2025; Yasir Haya et al., 2026).

Table 5. Results of the Analysis of Investment Criteria (Financial) For Purse Seine Business

Criteria Investment	Mark	Eligibility Standards	Information
NPV	Rp2,654,990,000	> 0	Worthy
Net B/C	4.23	> 1	Worthy
IRR	74.5%	> 12% (discount rate)	Worthy

Source: Processed Primary Data (2026); Economic Life 10 Years, Discount Rate 12%

Overall, all business analysis and investment criteria consistently demonstrated profitability and feasibility of the purse seine fishing business at the Kasiwa Fishing Port (PPI). The IRR, which far exceeds the discount rate, indicates the business's high resilience to rising capital costs. However, the high

proportion of fuel costs and crew wages/profit sharing, as well as the perishable nature of the catch, necessitate operational efficiency and improved quality management through the implementation of a cold chain system to maintain profitability and business sustainability (Sobariah et al., 2023).

CONCLUSIONS AND SUGGESTIONS

The purse seine fishing business at PPI Kasiwa, Mamuju Regency requires an investment cost of Rp822,600,000 and operational costs of Rp1,735,875,000 per year, with revenue of Rp2,250,000,000 per year and profits of Rp514,125,000 per year. Based on the business analysis, the R/C Ratio was 1.30; ROI 62.5%; Payback Period 1.6 years; BEP production 36,132 kg; and BEP price Rp19,288/kg. Based on the investment criteria analysis, a positive NPV of Rp2,654,990,000 was obtained; Net B/C 4.23; and IRR 74.5%. Thus, the purse seine business at PPI Kasiwa was declared profitable and financially feasible to be run and developed. It is recommended that business owners implement operational cost efficiencies, particularly fuel consumption, and maintain catch quality through the implementation of a cold chain system (Sobariah et al., 2023). Local governments and financial institutions are expected to expand access to capital and provide business assistance to fishermen so that purse seine businesses at the Kasiwa Fishing Port can develop sustainably. Further research is recommended to increase the sample size and include sensitivity analysis to fluctuations in fuel and fish prices.

ACKNOWLEDGMENT

The author would like to thank the management of PPI Kasiwa, the owners and crew of purse seine vessels, and the Marine Affairs and Fisheries Service of Mamuju Regency for their support in providing data and information during this research.

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