BUSINESS ANALYSIS OF PURSE SEINE FISHING GEAR AT POPOH BEACH FISHING PORT, EAST JAVA

Analisis Usaha Alat Tangkap Tangkap Purse Seine di UPT Pelabuhan Perikanan Pantai Popoh, Jawa Timur

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ABSTRACT

Tuna has an important economic value and is widely favored by people in Tulungagung Regency. According to BPS Kabupaten Tulungagung in 2018-2022 shows a significant increase in the volume and value of production, as well as the number of tuna fishing units. Tuna fishing business using purse seine gear is one of the important sectors in the fishing industry at UPT Pelabuhan Perikanan Pantai Popoh Tulungagung, East Java. This study aims to analyze the financial characteristics of purse seine fishing in the region. The research methods include field surveys, interviews with fishermen, and financial data analysis such as profit, R/C ratio, payback period, NPV, IRR, B/C ratio, and sensitivity analysis. The sampling method used in this research is purposive sampling with a total of 50 respondents. This research was conducted in July 2023. The results of the financial feasibility analysis of fisheries business showed that the average business profit was Rp. 73,811,161 during the tuna season (4 months), the R/C ratio value was 1.37 and the payback period (PP) value was 5.5 years, NPV was Rp. 94,346,195, IRR was 13.2%, B/C ratio was 1.08. The results of the business risk analysis show the coefficient of variation (0.01) < 0.5 and the lower limit of profit (280,898,197) > 0 so that small pelagic purse seine fisheries are included in the category worth developing and avoiding losses or risks suffered are small.

Keywords: Coefficient of Variation, Financial Feasibility, PPP Popoh Tulungagung, Purse Seine, Tuna

ABSTRAK

Ikan tuna memiliki nilai ekonomis yang penting dan banyak digemari oleh masyarakat di Kabupaten Tulungagung. Menurut BPS Kabupaten Tulungagung pada tahun 2018-2022 menunjukkan adanya peningkatan yang signifikan pada volume dan nilai produksi, serta jumlah unit penangkapan ikan tuna. Usaha penangkapan ikan tuna dengan menggunakan alat

tangkap purse seine merupakan salah satu sektor penting dalam industri perikanan di UPT Pelabuhan Perikanan Pantai Popoh Tulungagung, Jawa Timur. Penelitian ini bertujuan untuk menganalisis karakteristik finansial usaha penangkapan ikan tuna dengan alat tangkap purse seine di wilayah tersebut. Metode penelitian yang dilakukan meliputi survei lapangan, wawancara dengan nelayan, dan analisis data keuangan seperti keuntungan, R/C ratio, payback period, NPV, IRR, B/C ratio, dan analisis sensitivitas. Metode pengambilan sampel yang digunakan dalam penelitian ini adalah purposive sampling dengan jumlah responden sebanyak 50 orang. Penelitian ini dilakukan pada bulan Juli 2023. Hasil analisis kelayakan finansial usaha perikanan menunjukkan bahwa rata-rata keuntungan usaha sebesar Rp. 73.811.161 selama musim tuna (4 bulan), nilai R/C ratio sebesar 1,37 dan nilai payback period (PP) selama 5,5 tahun, NPV sebesar Rp. 94.346.195, IRR sebesar 13,2%, B/C ratio sebesar 1,08. Hasil analisis risiko usaha menunjukkan nilai koefisien variasi (0,01) < 0,5 dan batas bawah keuntungan (280.898.197) > 0 sehingga usaha perikanan pukat cincin pelagis kecil termasuk dalam kategori layak untuk dikembangkan dan terhindar dari kerugian atau risiko yang diderita kecil.

Kata Kunci: Koefisien Variasi, Kelayakan Finansial, PPP Popoh Tulungagung, *Purse Seine*, Tuna

INTRODUCTION

Tulungagung Regency has potential fishery resources in the form of sea waters, brackish waters, public waters and freshwater fish farming. Marine fishing efforts are in the southern coastal waters of Java Island, namely the Indonesian Ocean with a potential coastline of 61,470 km, a total potential of 25,000 tons per year. Marine fish production in Tulungagung is dominated by large and small pelagic fish such as tuna, lemuru, skipjack, tuna, and mackerel. In 2018, tuna production was more than 2000 tons. Besole Village, Besuki District is a village with an area of 5.77 km^2 with the village boundaries in the North being Tanggulwelahan Village and Campurdarat District, in the West bordering Besuki Village, in the South bordering the Indonesian Ocean and in the East bordering Tanggunggunung District. The population of Besuki District who work as fishermen numbered 507 people in 2019. PPP Popoh is a port located in Besole Village, Besuki District with a fishery potential of almost 3000 tons of fish landed at the Popoh Fish Auction Place (TPI) in 2019. The tuna fishing gear in Tulungagung Waters is a purse seine. Catching using a purse seine is carried out with a system of 2 ships, 1 net carrier ship and 1 net spreading ship and fish containers. Purse seine fishermen at PPP Popoh are fishermen who apply the one day fishing system (Yahya, 2020).

Purse seine is a fishing gear that is classified in the surrounding nets group. This fishing gear is classified as an effective fishing gear for catching small pelagic fish commodities. Purse seine operations are generally carried out in waters that have relatively deep depths and currents that are not too strong as a fishing tool that is included in the group of ring nets used to catch schools of pelagic fish with a trap shape resembling a bag and a ring-shaped top. This fishing gear is composed of a rectangular net sheet fitted with a buoy on the top and a rope on the bottom (Mustasim & Handayani, 2023). Purse seine operations are carried out actively by circling schools of fish. In addition to relatively affordable operating costs and easy-to-obtain materials, purse seines are also fishing gear that is easy to operate (Pratama et al., 2016). This study aims to analyze the financial characteristics of tuna fishing efforts using purse seine fishing gear at the Popoh Coastal Fishing Port (PPP), Tulungagung Regency, East Java Province.

METHODS

The study was conducted during July-August 2023 at the Popoh Coastal Fishing Port (PPP), Tulungagung Regency, East Java. Using a purposive sampling technique, this study involved 50 purse seine fishermen who specialize in catching tuna as respondents. Data collection includes two types: primary and secondary. Primary data was obtained through a combination of direct observation in the field, interviews with selected respondents, and distributing questionnaires as recommended by Syam (2018). While secondary data comes from government agency documentation, previous research results, scientific publications, and university archives.

Referring to the methodology developed by Aydra et al. (2020), data analysis includes two main aspects: financial analysis and risk analysis of small pelagic purse seine fishery businesses in Popoh Waters, Tulungagung Regency. Financial analysis is intended to evaluate the level of success and profitability of ongoing businesses. The parameters used include analysis of revenue, profit, R/C Ratio, Payback Period (PP), Net Present Value (NPV), Net Benefit Cost Ratio (Net B/C), and Internal Rate of Return (IRR). The overall analysis aims to understand the cash flow pattern in a period, so that it can anticipate the financial impact and evaluate the effectiveness of cost use.

1. Business Financial Analysis

a) Income

Income can come from various sources and is referred to by various terms, depending on the business (Ismail, 2020). From the explanation above, a revenue formula will be obtained, namely:

$$TR = Y \times Py$$

Description:
TR = Revenue
Y = production quantity
Py = price of each product

b) Profit Analysis

Profit analysis is conducted to determine how much profit is obtained from a business being run. The formula used is as follows:

$$\pi = TR - TC$$

Description:
π = profit
TR = total revenue
TC = total cost

c) R/C Ratio

The R/C ratio is the comparison between revenue and total cost. If the R/C value is large, it means that the business activity is the most profitable. The formula used is as follows:

$$R/C = \frac{TR}{TC}$$

d) Payback Period

According to (Nutrisi, 2022), the Payback Period is the period of time required to return the investment value through the revenues generated by the project. The payback period formula is as follows:

$$PP = \frac{\text{Investment Value}}{\text{Profit}} \times 1 \text{ year}$$

e) Net Present Value (NPV)

NPV is used to calculate whether the business is feasible to run or not. To calculate the present value, it is necessary to determine the relevant interest rate (Nadi & Wenten, 2020).

$$NPV = \sum_{t=1}^{n} \frac{CF_t}{(1 + K)_t} - I_0$$

Description:

CFt = Annual cash flow in period t
I_0 = Initial investment in year 0
K = Interest rate (discount rate)
t = Time/year of activity (year 0 to n)
n = Age of business

f) Net B/C

Net Benefit Cost Ratio (Net B/C) is a comparison between the level of revenue of a business unit and the costs incurred to obtain the revenue.

$$\text{Net B/C Ratio} = \frac{\sum_{t=0}^{n} \frac{Bt-Ct}{(1+i)^t}}{\sum_{t=0}^{n} \frac{Ct-Bt}{(1+i)^t}}$$

Description:

Net B/C Ratio = ratio of positive net benefit value to negative net benefit value.
Bt = total value of inflow/receipt
Ct = total value of outflow/expenditure
t = time/year of activity (year 0 to n)
i = interest rate used to discount the time of benefit value
n = age of business

g) Internal Rate of Return (IRR)

IRR is used to analyze interest rates. If the IRR value is more than the applicable interest rate, the business is eligible for bank financing (Suryana, Abidin, & Kalsum, 2016). The IRR value is obtained through the following interpolation formula:

$$IRR = I_1 + \frac{NPV_1}{NPV_1 - NPV_2} \times (i_2 i_1)$$

Description:

i_1 = discount rate that produces positive NPV
i_2 = discount rate that produces negative NPV
NPV_1 = positive NPV value
NPV_2 = negative NPV value

2. Risk Analysis

Risk analysis aims to determine how much risk is experienced in running a business against the benefits obtained. The risk of a business can be known with three approaches, namely Expected Results (E), Variance Analysis (Standard Deviation/V), and Risk Relationship with Income (CV and L) (Andani et al., 2014).

a) Results Obtained (E)

One component in the risk analysis in this study is the expected results (E). The expected results are calculated from the average profit obtained from a business that is being run. The following calculation formula is used:

$$E = \frac{\sum_{t=1}^{n} Ei}{n}$$

Description:
E   = average profit (expected result)
Ei   = net result in year/period i
n   = number of observation periods

b) Variance Analysis (V)

The risk level can also be measured using a statistical approach through the variance test or standard deviation. This approach is used to determine the distribution of business income values around the average income value. The following calculation formula is used:

$$V^2 = \frac{\sum_{t=1}^{n}(Ei - E)^2}{n - 1}$$

The standard deviation is the square root of the variance, of the level of profit/loss obtained or $V = \sqrt{V^2}$. where: V^2 = variance; V = standard deviation = risk; E = expected results; Ei = net result in year/period i; dan n = number of observation periods.

c) Relationship between Lowest Risk and Coefficient (CV)

The coefficient value indicates the relationship between the risk that must be borne (variance) and the average income obtained by a business. If the variation value is greater, it indicates that the risk that must be borne is also greater compared to the profit. The following calculation formula is used:

$$CV = \frac{V}{E}$$

Description:
CV   = coefficient of variation
V   = standard deviation
E   = average result

d) Lower Profit Limit (L)

The lower profit limit value indicates the lowest income opportunity that can be received by a business. The following calculation formula is used:

$$L = E - 2V$$

Description:
L   = lower limit of profit
E   = average result (mean)
V   = standard deviation.

A relationship is obtained between the lower limit of profit (L) and the coefficient of variation (CV) value. If the CV value is > 0.5, then the L value is < 0, then each production process will have the potential to experience losses. If CV < 0.5, then the L value is > 0, then a business will always experience profit or break even.

RESULT

Investment Costs

Investment costs are the main factor in a business as a means of smooth production processes for a business to gain profit (Anggraeni, et al., 2018). Investment costs are costs incurred by business owners to obtain fixed assets used to run their business activities. Investment is the initial capital used to run a business. Investment costs incurred in the purse seine fishery business are an important factor that supports the capture fisheries activities of purse seine fishermen based at the Popoh Beach Fishing Port, Tulungagung Regency. The

investment costs required for the purse seine capture fishery business at the Popoh PPP are IDR 1,278,367,347 consisting of ships, engines, and fishing gear. Depreciation of the investment components of the purse seine fishery business is IDR 115,693,878. Details of the average investment costs, depreciation costs, technical age and economic value from the results of interviews with respondents can be seen in table 1.

Table 1. Average Investment Value of Purse Seine Fishing Business Based at PPP Popoh Tulungagung

No.	Description	Unit	Value (Rp)	U.E (year)	Depreciation expense per year (Rp)
1	Ship	Unit	806,122,449	20	40,306,122
2	Engine	Unit	190,612,245	10	19,061,224
3	Fishing gear	Unit	281,632,653	5	56,326,531
	Total Investment		1,278,367,347		115,693,878

Operational Costs
a. Fixed costs

The average fixed costs incurred in the purse sine fishery business each year are Rp. 247,350,000. Details of the average fixed costs of the purse sine fishery business can be seen in Table 2.

Table 2. Average Fixed Costs of Purse Seine Fishing Business Based at PPP Popoh Tulungagung

No.	Description	Volume	Unit	Value (Rp)
1	Maintenance costs	1	Year	131,306,122
2	Administration fee (measurement letter)	1	Year	100,000
3	Administration fee (large amount)	1	Year	250,000
4	Depreciation	1	Year	115,693,878
	Total Fixed Cost			247,350,000

b. Variable costs

The variable costs incurred in the purse sine fishery business are Rp. 209,202,000. The details of the variable costs on average consist of fuel, oil, drinking water and ice cubes. The amount of average costs incurred is influenced by the number of trips and the duration of fishing. The details of the average variable costs can be seen in table 3.

Table 3. Average Operational Costs of Purse Seine Fishing Business Based at PPP Popoh Tulungagung

No.	Description	Volume	Unit	Unit Price (Rp)	Value (Rp)
1	Fuel	28492	Liter	6,500	185,198,000
2	Oil	102	Liter	55,000	5,610,000
3	Mineral Water	68	Gallon	6,500	442,000
4	Ice Cube	1496	Unit	12,000	17,952,000
	Total Variable Cost				209,202,000

The operational costs used in purse seine fishing activities consist of fixed costs and variable costs. The average total operational costs incurred by purse seine fishermen based at the Popoh Coastal Fishing Port, Tulungagung Regency in carrying out capture fisheries activities are Rp. 456,552,000. These costs come from fixed cost components consisting of

maintenance costs, administration costs (measurement letters), administration costs (large passes) and depreciation, as well as variable costs consisting of fuel costs, oil, drinking water and ice cubes. The amount of operational costs is influenced by the frequency of going to sea, the length of time at sea, the amount of production, and the distance between the fishing location and the fish landing site.

Financial Feasibility of the Business

To evaluate the level of financial success of the purse seine fishing business, a financial feasibility analysis was conducted at the Popoh Coastal Fishing Port (PPP), Tulungagung Regency. This evaluation includes several parameters such as production, income, profitability, revenue/cost ratio (R/C Ratio), and payback period (PP). The analysis results show that the purse seine operation was able to produce 21,796 kg of fish with an income of IDR 286,897,959. This business was declared financially feasible with a profit of IDR 73,811,161 and an R/C ratio of 1.37, although the payback period was relatively long, namely 7.1 years. Nutrisi (2022) stated that a business is categorized as profitable if the R/C ratio exceeds 1, breakeven if the R/C ratio is equal to 1, and loss-making if the R/C ratio is less than 1. Gunawan et al. (2016) added that the duration of the return on investment is directly proportional to the payback period value - the higher the value, the longer it takes to return the investment, and vice versa. Full details can be seen in Table 4.

Table 4. Analysis of Purse Seine Fishing Efforts Based at PPP Popoh Tulungagung

No.	Description	Nilai
1	Production (kg)	21,796
2	Income (Rp)	286,897,959
3	Profit	73,811,161
4	R/C ratio	1.37
5	Payback period	7.1

Table 5. Business Feasibility

Description	Value	Information
IRR	74.16%	An internal rate of return (IRR) exceeding the benchmark interest rate of 6% indicates that this venture is financially feasible to implement
PBP	3.87	
PV Benefit	1,751,857,117	
PV Cost	1,150,781,534	
B/C Ratio	1.52	
NPV	601,075,583	A positive Net Present Value (NPV) indicates that this business is financially feasible to implement
Cash Flow (+)	810,277,583	
Cash Flow (-)	(209,202,000)	
Net B/C Ratio	3.87	A benefit-cost ratio that shows a value greater than one indicates that this venture is financially feasible to implement.

Based on the investment criteria analysis presented in Table 5, the purse seine fishery business at PPP Popoh, Tulungagung Regency shows positive feasibility indicators, where the NPV is positive, the net B/C is greater than 1, and the IRR exceeds the reference interest rate of 6%. In the evaluation of the feasibility of a business that has an economic life of more than

5 years with discounted criteria, four main parameters are used: NPV (Net Present Value), IRR (Internal Rate of Return), Net B/C ratio, and Payback Period (PP).

Specifically, this business recorded an NPV of IDR 601,075,583, indicating a positive value indicating financial feasibility. The IRR reached 74.16%, far exceeding the reference interest rate of 6%, strengthening the indication of business feasibility. Furthermore, the Net B/C ratio of 3.87 also supports the conclusion that this business is feasible to run, because its value exceeds the minimum threshold of 1.

Risk Analysis

Measurement of the risk level of small pelagic fishery businesses with purse seine fishing gear uses risk analysis. The basis of the risk analysis of small pelagic purse seine fishery business is the net benefit from cash flow obtained from the business during the 5 years of the business. The results of the business risk analysis are seen from the descriptive statistical values, including expected results (E), variance analysis (standard deviation/V), variance coefficient (CV) and lower limit of profit (L) presented in Table 6.

Table 6. Risk Analysis of Purse Seine Fishery Business at PPP Popoh, Tulungagung Regency

No	Risk Analysis	Parameter	Value
1	E (expected result)	Mean	286,897,959
		Median	273,000,000
2	V (Standard Deviation)	Standard Deviation	2,999,881
3	Coefficient of Variation (CV)		0.010977078
4	Lower Profit Limit (L)		280,898,197
	Description n = 50		

The risk analysis of purse seine fishery business in PPP Popoh, Tulungagung Regency produced an expected value (E) in the form of an average profit of IDR 286,897,959, with a standard deviation of IDR 2,999,881. The risk level of this business can be categorized as low, indicated by the variation value (V) which is below 50% of the average profit. This finding is in line with the criteria put forward by Andani et al. (2014), where a capture fishery business is categorized as high risk if its variation value exceeds half of the average business profit.

A comprehensive evaluation of purse seine fishery business risk was carried out using two main approaches: the coefficient of variation and the lower limit of profit. This analysis aims to examine the correlation between risk and business income, by utilizing the expected results (E) and standard deviation (V) data obtained from descriptive statistical analysis of net benefits over a 5-year period. The calculation results show a coefficient of variation (CV) of 0.01 (less than 0.5) and a lower limit of profit (L) of Rp. 280,898,197 (greater than 0), indicating that this business consistently generates profits without significant risk of loss.

The performance of capture fisheries businesses cannot be separated from the dynamics of production costs and fluctuations in fish selling prices. Andani et al. (2014) identified that market instability can cause a decrease in the selling price of fishery commodities, which has implications for low income for business actors. This finding is reinforced by research by Munisarun and Setyarini (2022) which shows a positive relationship between the magnitude of the coefficient of variation and the level of risk faced by fishery business actors.

DISCUSSION

Cost and Investment Analysis

The purse seine fishery business at PPP Popoh requires a fairly large investment cost of IDR 1,278,367,347, with the largest components being ships (63%), followed by fishing gear (22%), and engines (15%). The amount of this investment is in line with the research of

Nurlaela et al. (2023) which shows that purse seine requires a large investment of around IDR 1.5-2 billion (Nurlaela, 2023). This study confirms that investment in purse seine fisheries does not only include the cost of purchasing ships, but also the fishing gear and engines needed for efficient operations. In addition, the investment value at PPP Popoh is relatively lower compared to research showing that investment in other locations can reach IDR 1.5-2 billion (Nurlaela, 2023). This difference can be explained by variations in fleet size and specifications of the fishing gear used, which affect the total investment cost. Differences in investment costs can be influenced by factors such as the size and specifications of the vessels and the fishing gear used. For example, research by (Sipahutar et al., 2022) shows that the characteristics and specifications of fishing gear used in purse seine operations can affect efficiency and catch yields (Sipahutar et al., 2022). In addition, economic and managerial factors also play an important role in determining investment costs and the sustainability of fisheries businesses (Floch et al., 2011). Thus, differences in investment costs between different locations may reflect variations in management practices and technologies applied in the fisheries industry.

The annual operating cost structure reached IDR 456,552,000, consisting of fixed costs of IDR 247,350,000 (54%) and variable costs of IDR 209,202,000 (46%). The larger proportion of fixed costs indicates high operational costs even when not operating. This study is in line with research showing that fixed costs in fisheries businesses often dominate, especially in contexts where significant initial investment is required for vessels and equipment (Farida et al., 2019). Research by Farida et al. (2019) noted that the annual operational costs for the mini purse seine fishing business in Tasikagung reached IDR 511,099,200, indicating that fixed costs also contribute greatly to the operational cost structure.

Financial Feasibility Analysis

The results of the financial feasibility analysis show promising prospects with an R/C Ratio of 1.37, indicating that every rupiah of costs generates revenue of Rp1.37. This value is higher than the findings (Nababan et al., 2017) which recorded an R/C Ratio of 1.25 in Bitung, but lower than the study in Kendal which reached 1.45. The R/C Ratio showing a value of more than one indicates that the fishery business can provide profits, which is in line with the basic principles of financial feasibility analysis (Nababan et al., 2017). Furthermore, the positive NPV of Rp601,075,583 and the IRR of 74.16% far exceed the benchmark interest rate of 6%, indicating good profitability. This finding is consistent with research (Picaulima et al., 2022) which found that the IRR of purse seine fisheries in various regions of Indonesia ranged from 40-80%, indicating that fisheries with purse seine fishing gear have significant potential to provide sustainable profits. This study also emphasizes the importance of good management to ensure that the rate of return on investment remains high and can compete with prevailing interest rates (Tangke, 2011).

The Net B/C Ratio of 3.87 indicates significant benefits compared to costs, although the Payback Period of 7.1 years is relatively long. This payback period is longer than the findings (Najah et al., 2016) which recorded a Payback Period of 5.5 years at the Nizam Zachman Port in Jakarta. This difference can be caused by variations in productivity, fish selling prices, and operational efficiency. The above research shows that these factors play an important role in determining the return on investment, where locations with higher productivity and better selling prices tend to have shorter Payback Periods. In addition, a financial feasibility analysis conducted by (Neliyana et al., 2016) shows that although Payback Period can be an important indicator, a high Net B/C Ratio such as 3.87 indicates that the benefits gained from the investment far exceed the costs incurred. This is in line with research showing that a Net B/C Ratio greater than one is an indication that the project is worth continuing. Factors that affect operational efficiency, such as fleet management and marketing strategies, can also contribute to differences in Payback Period between different locations. Research by (Firdaus et al., 2020)

emphasizes the importance of effective management in increasing productivity and reducing operational costs, which in turn can shorten the Payback Period.

Business Risk Analysis

From a risk perspective, this business shows a relatively safe profile with a standard deviation of IDR 2,999,881, far below the average profit of IDR 286,897,959. The coefficient of variation (CV) of 0.01 <0.5 indicates low risk, in line with research (Hasan et al., 2019) which found that the CV of purse seine ranged from 0.01-0.03 in Pelabuhan Ratu. This finding indicates that the fishery business with purse seine fishing gear has good stability in terms of income, which is important to attract investment and support business sustainability. However, this result differs from the findings (Elinah et al., 2021) in Palembang which recorded a CV of 0.4, indicating variations in risk between regions. This difference may be caused by local factors such as market conditions, types of fish caught, and management strategies implemented by fishermen in each location. The lower limit of profit of IDR 280,898,197 provides a substantial "safety margin", indicating that despite the risks, this business can still provide sufficient profit to cover costs and provide good returns to investors. This is supported by research (Sadono et al., 2021) which shows that purse seine has better profit stability than other fishing gear, which can be an important consideration for fishermen and investors in choosing the type of fishery business to run. Factors such as season, weather, and price fluctuations still need to be anticipated as potential sources of risk, as identified in research (Wijaya & Firdaus, 2016), which emphasizes the need for risk mitigation strategies to maintain the sustainability of fisheries businesses.

Policy Recommendations

The government needs to develop comprehensive policies including capital support, infrastructure strengthening, and capacity building for fishermen. Referring to successful experiences in other regions, fleet modernization and operational efficiency improvement programs can be carried out in stages by considering local characteristics. Research shows that challenges in infrastructure development often involve land acquisition and funding issues, which need to be addressed to support the development of the fisheries sector (Novian, 2024). The development of fisheries information systems and strengthening marketing institutions are also important to support business sustainability. Partnership institutions in capture fisheries businesses can help fishermen deal with uncertainty and improve the sustainability of their businesses (Solihin & Nababan, 2018). By building strong partnerships and effective information systems, fishermen can more easily access markets and get better prices for their catches.

CONCLUSION

The results of the study indicate that the tuna fishing operation using purse seine in the waters of Popoh, Tulungagung Regency has proven to be profitable and financially feasible. This is supported by a series of positive financial indicators: annual profit reaching IDR 73,811,161, R/C ratio 1.37, payback period (PP) 7.1 years, NPV IDR 94,346,195 (above 0), net B/C 1.45 (exceeding 1), and IRR 13.20% (exceeding the benchmark interest rate of 6%). Based on these indicators, this business is not only feasible to continue but also has the potential to be further developed. To support this development, further studies are needed on the technical and operational aspects of purse seine fishing gear as well as comprehensive research related to various aspects of the purse seine fishery business.

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