International Journal of Technology and Education Research

https://e-journal.citakonsultindo.or.id/index.php/IJETER

E-ISSN: 2986-0733

Analysis of Production and Income of Live Shrimp Fishermen after Kendari Bay Revitalization

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Abstract

The results of this research aim to: (1) Find out how much production and income earned by live shrimp fishermen after the revitalization of Kendari Bay. (2) Knowing the feasibility of the live shrimp fishing business after the revitalization of Kendari Bay. This research was carried out in March 2024 in Lahundape Village. The population in the study, namely fishermen who run a live shrimp business, numbered 8 people, using a broad sampling technique where all members were sampled as the research sample. The analysis used is analysis of costs, revenues, income and R/C Ratio obtained from research results which show that shrimp production after the revitalization of Kendari Bay is 18 kg/month with an average total cost of Rp. 287,590, the total average receipt is Rp. 2,700,000, the average total income of Rp. 2,412,410 and the R/C ratio for live shrimp fishermen is 9.4. This ratio meets business feasibility standards because the R/C Ratio is >1, meaning every Rp. 1 fee will get 9.4 times revenue.

Keywords: ***Production Analysis, Income, feasibility, Live Shrimp, Revitalization*****.**

INTRODUCTION

Indonesia, as an archipelago, has a coastline of 81,000 kilometers and an ocean area of approximately 5.8 million square kilometers that is rich in natural resources and environmental services. The region is divided into the Sunda shelf and the Sahul shelf, separated by deep seas and straits and located between the Indian Sea, South China Sea and Pacific Sea, giving it a globally strategic position. With a focus on sustainable development, coastal and marine areas are becoming the cornerstone of economic growth, pushing natural resource management from land to sea in response to population growth putting pressure on terrestrial resources (Utina et al.,

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E-ISSN: 2986-0733

2018). The fisheries sector plays a key role in national development, providing significant employment in the capture, cultivation, processing, distribution and trade of seafood. The vast economic potential of seafood provides room for improvement, despite symptoms of over-fishing in western regions such as the Java Sea and Malacca Strait, while eastern regions remain underutilized (Triarso, 2013; Siregar, 2015).

The potential of fish resources in Southeast Sulawesi marine waters reaches 1,520,340 tons per year, but only about 15.41% or 234,239 tons are managed. The region is located in Fisheries Management Areas (WPP) 13 and 14, covering waters around Flores and the Makassar Strait, and extending to the Banda Sea, Arafuru Sea, Seram Sea, and Bone Bay. Its cultivation potential involves fish such as snapper, grouper and lobster, as well as mollusca such as shellfish, sea cucumbers and pearls, in addition to seaweed cultivation which has the potential to cover up to 60 hectares, or 20% of the total land area of marine waters near the coast. Aquaculture and seaweed farming are spread across the south and west coasts of Muna Island, Tiworo Strait, Poleang District, Rumbia, Kasipute, and Lasolo Bay, with 528,000 hectares of potential ponds, but only 15% are utilized for tiger shrimp and milkfish with a production of around 25,000 tons per year. The cultivation of cages, pearl mussels and sea cucumbers is still limited and usually practiced by large capital owners.

Table 1 Production and Production Value of Capture Fisheries by Regency/City in Southeast Sulawesi Province, 2020

district/city	capture fisheries	
	volume (tons)	Value (000 Rp)
Buton	26.231	525.891.484
Muna	20.880	798.168.222
Konawe	2.538	79.323.480
Kolaka	18.908	463.704.646
South Konawe	8.496	310.794.045
Bombana	18.738	535.019.896
Wakatobi	20.390	376.881.795
North Kolaka	5.229	184.202.765
North Buton	6.880	122.635.081
North Konawe	15.093	341.598.470
East Kolaka	96	2.354.360
Konawe Islands	5.752	157.010.980

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West Muna	9.302	653.334.645
Central Buton	21.013	539.408.100
South Buton	23.306	652.434.700
Kendari City	33.065	545.207.745
Baubau City	19.259	466.121.958
Southeast Sulawesi	255.178	6.754.092.372

Source: BPS Southeast Sulawesi 2022, processed 2024

In Table 1, it can be seen that capture fisheries in Southeast Sulawesi have the highest production in the Buton region, which amounted to 26,231 with a value of Rp.525,891,484 This potential is very supportive for developing businesses in the fisheries sector.

Shrimp has an important role in the fisheries sector due to its high economic value in the international market, supported by abundant nutritional content. The high domestic and international demand encourages farmers to make shrimp farming the main focus, with the hope that this commodity can contribute significantly to the country's foreign exchange (Ismail, 2013). Shrimp production in Indonesia develops through two methods, namely marine capture and aquaculture. Production from marine capture experiences erratic variations, while aquaculture shows significant fluctuations. In Southeast Sulawesi, shrimp is one of the main sources of income for fishermen with production reaching 1,664 tons in 2021, according to Statistics Indonesia (BPS Indonesia, 2023). This production comes from aquaculture and capture fisheries using fishing gear such as gill nets, trammel nets, dogol, and beach seines.

Fishermen in Kendari Bay catch live shrimp with nets, and sell them either directly or online to anglers. However, after the revitalization of Kendari Bay, the shrimp habitat in the area was disrupted due to the filling of the waters, so the live shrimp moved to other locations further away, forcing fishermen to find new locations. This revitalization also decreased fishermen's catches and their income. Reclamation projects through infrastructure development result in the loss of important ecosystems, such as clams, shrimps and crabs, and negatively impact the economic well-being of coastal communities (Amalia and Surdin, 2019).

The revitalization of the Kendari Bay area affects the production and income of live shrimp fishermen, therefore, a study was conducted with the title "Analysis of Production and Income of Live Shrimp Fishermen After the Revitalization of Kendari Bay".

METHOD

The population in this study are all live shrimp fishermen which amounted to 8 fishermen

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respondents who do business selling live shrimp. The method of determining the sample to be carried out in this study is to use the saturated method or census and the population in this study is all live shrimp fishermen. The data used in this study are primary data and secondary data. Primary data comes from wawncara using a questionnaire. Data collection techniques are done by interview, observation, and documentation. Data analysis that will be used in this study are:

1. Knowing how much the income of live shrimp fishermen after the revitalization of Kendari bay can use the formula of production costs, revenue and income proposed by (Soekartawi, 2006).
   TC=FC+VC
   Description:
   TC = *Total Cost*
   FC = *Fixed Cost*
   VC = *Variable Cost*
2. Revenue is the result of multiplying the production obtained by the selling price of the product. The Revenue Formula is as follows:
   TR = P . Q
   Description;
   TR = Total revenue (Rp)
   P = Product Price (Rp)
   Q = Product Quantity (Kg)
3. Income analysis is the difference between total revenue (TR) and all costs (TC). Where revenue is the multiplication of production and selling price, while costs are all expenses used. The following is the formula for income
   I = TR - TC
   Description;
   I = Income (Rp)
   TR = Total revenue (Rp)
   TC = Total expenditure (Rp)
4. Knowing the feasibility of live shrimp fishing business after the revitalization of kendari bay, according to Suratiyah (2015), R / C is the ratio between revenue and total costs.
   $$R/C = \frac{\text{Total Revenue (TR)}}{\text{Total Cost (TC)}}$$
   Where:
   Total Revenue = The amount of revenue earned

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Total Cost = The amount of costs incurred

There are three criteria in the calculation, namely:

a. If R/C > 1, the farm is profitable.

b. If R/C = 1, the farm breaks even.

c. If R/C < 1, the farm is losing money.

RESULTS AND DISCUSSION

Production Analysis of Live Shrimp Fishermen Business after Kendari Bay Revitalization

Based on observations, it shows that the conditions in the study area still support shrimp fishing even though the production is less after the revitalization of Kendari Bay compared to before the revitalization of Kendari Bay there are live shrimp that are freely caught by fishermen. Based on the opinion of (Sofiyanti and Suartini, 2016). Production of live shrimp fishermen can be seen in Table 2

Table 2 Average Production of Live Shrimp Fishermen after Kendari Bay Revitalization

Capture period (Week)	Pre Revitalization (Kg)	Post Revitalization (Kg)
1	8	4
2	8	4
3	7	5
4	9	5
Total	32	18

Source: Primary data processed, 2024

In Table 2 the amount of live shrimp production after revitalization is less than before revitalization where the amount of production after revitalization is 18 kg and before revitalization 32 kg. This decrease in catch is due to the revitalization of the research area, namely in Kendari Bay where Kendari Bay is stockpiled so that the marine ecosystem is disturbed and causes a decrease in fishermen's production. The revitalization of Kendari Bay since 2019 is a government initiative to improve welfare, economic independence, and competitiveness by building infrastructure. The reclamation project aims to save the bay from sedimentation and pollution, despite the impact of silting up the waters and reducing fishermen's management areas, which disrupts the ecosystem and reduces community income. However, the reclaimed moorings provide a place to sell for fishermen's wives, helping to sustain the economy of affected families (Amalia and Surdin, 2019).

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E-ISSN: 2986-0733

Income Analysis of Live Shrimp Fishermen after Kendari Bay Revitalization

1. Production Cost

Cost is a number of sacrifices that we spend to obtain or produce something (Sukirno, 1999). The costs of galah shrimp fishermen who must provide other costs are fixed costs, variable costs and total costs.

Table 3 Monthly Average of Live Shrimp Fishermen after Kendari Bay Revitalization

Cost Type	Description	Average (Rp)/Month
Fixed Cost	Mesh (Trawl)	2.854
	Bucket	1.615
	Flashlight	12.396
	Chests	6.272
	Tarpaulin	8.635
	Machine	29.063
	Shavings	1.823
	Hose	1.433
	Total	64.090
Variable Cost	Electricity	100.000
	Coffee	10.000
	Sugar	15.000
	Bbm	80.000
	Cigarettes	18.500
	Total	223.500
Total Cost	Fixed Cost	64.090
	Variable Cost	223.500
	Total	287.590

Source: Primary data processed, 2024

Based on table 3 above, it can be explained that;

a. That there are 8 types of tools used by respondents in this study which include; nets, buckets, flashlights, crates, tarpaulins, machines, scrapers and hoses with a total average fixed cost per month of Rp. 64,090 the highest fixed cost of respondents is the machine tool with a total cost of Rp. 29,063. while the lowest cost is the cost of the hose with a total cost of Rp. 1,433.

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b. That the average total variable costs incurred per month amounted to Rp. 223,500 the largest variable cost is the cost of electricity of Rp. 100,000, because in running this business electricity affects the survival of shrimp that use the help of oxygen machines while the smallest cost incurred is the cost of coffee of Rp. 10,000 brought by fishermen in carrying out shrimp catching activities as provisions.
c. That the total cost incurred by shrimp fishermen in this study is Rp. 287,590 per month, which is obtained from the entire amount of fixed costs and variable costs incurred by respondents in catching to selling live shrimp. The largest cost incurred is the variable cost of Rp. 223,500, the amount of variable costs is issued because the price of each component varies and does not settle every month.

2. Revenue and Income

Gross income is the value obtained by respondents from the sale of shrimp multiplied by the prevailing selling price of shrimp at that time which is calculated in units of rupiah, therefore total revenue is strongly influenced by the number of shrimp caught and the prevailing price. While income is the difference between revenue and total costs incurred in running the business.

Table 4 Average Revenue and Income Per Month of Live Shrimp Fishermen after Kendari Bay Revitalization

Variables	Description	Average	
		Pre Revitalization	Post Revitalization
Reception	Production (Kg)	32	18
	Price (Rp)	150.000	150.000
	Revenue (Rp)	4.800.000	2.700.000
Revenue	Reception	4.800.000	2.700.000
	Total Cost	287.590	287.590
	Revenue	4.512.410	2.412.410

Source: Primary data processed, 2024

Based on table 4 above, it can be explained that;

a. There are 2 production gains where Pre Revitalization of Kendari Bay is 32 Kg and Post Revitalization of Kendari Bay is 18 Kg with an average shrimp length of 7 cm and in 1 kg of shrimp there are 300 tails with a selling price of Rp.150,000/Kg. Post Kendari Bay Revitalization revenue is less than Pre Kendari Bay Revitalization revenue because at the time of Kendari Bay Revitalization the shrimp ecosystem was damaged due to the

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hoarding of part of Kendari Bay so that the shrimp catch of fishermen who used to be a lot became less. Then the revenue obtained is different Pre Revitalization of Kendari Bay which is 4,800,000 and post Revitalization of Kendari Bay Rp. 2,700,000. The amount of respondents' income is influenced by the catch obtained in this case the catch depends on the season and weather conditions in the shrimp catching area.

b. The income of respondents of live shrimp fishermen after the revitalization of Kendari bay obtained was Rp. 2,479,285 / month with a total revenue of Rp. 2,700,000 while before the revitalization of kendari bay the income of fishermen was Rp. 4,512,410 / month with a total revenue of Rp. 4,800,000. different income because the shrimp production obtained after the revitalization of kendari bay decreased due to the revitalization of the kendari bay area which as a place to catch shrimp is already farther from the surface of the bay.

The income earned by live shrimp fishermen after revitalization proves that the revitalization of Kendari Bay has a negative impact. Reclamation fill in some parts of the bay has affected the ecosystem of Kendari Bay, causing a decrease or loss of some marine biota which is a source of income for the community around the bay. Based on research conducted by (Amalia *et al*, 2019), the community considers that reclamation carried out as part of Kendari Bay revitalization efforts to overcome siltation is not appropriate. Therefore, it is unfortunate if the Kendari Bay area development plan actually worsens the condition of the waters that actually want to be improved. Although at the beginning of the reclamation implementation, mud dredging was carried out to overcome the existing sedimentation in the bay, this effort must be accompanied by handling upstream and along the river flow. One way is to build check dams or water pockets along the river to accommodate sediments carried by water during rainfall.

Business feasibility analysis of live shrimp fishermen after Kendari Bay revitalization

Profit is the difference between revenue and total costs incurred for the production process. Profit is the goal of every business, so the greater the profit obtained, the more feasible the business is run (Sunaryo, 2001). To find out whether or not the business carried out by fishermen in catching live shrimp after the revitalization of Kendari Bay can be seen as follows:

Table 5 Feasibility (R/C Ratio) of Live Shrimp Fishermen Business after Kendari Bay Revitalization

No.	Description	Pre Revitalization	Post Revitalization
1	Reception	4.800.000	2.700.000

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2	Total Cost	287.590	287.590
3	R/C Ratio	16,8	9,5

Source: Primary data processed, 2024

Table 5 shows that the R/C ratio value of the business run by live shrimp fishermen after revitalization is 16.8 and before or pre-revitalization of Kendari Bay is 9.5. Based on the criteria of the R / C ratio value> 1 indicates that the business of fishermen in running live shrimp after the revitalization of Kendari Bay is said to be efficient. The R / C ratio value in the fishing business run by fishermen after the revitalization of kendari bay for 1 period is 9.5, meaning that every Rp. 1,000 costs in running a live shrimp business after the revitalization of Kendari bay generates Rp. 9.5 revenue while for the period before or Pre revitalization of kendari bay for 1 production of 16.8, meaning that every Rp. 1,000 cost expenditure in running a shrimp business generates Rp. 16.8.

The revitalization of Kendari Bay, including reclamation, is considered to have reduced fishermen's management areas and disrupted the bay ecosystem, resulting in a decrease in community income. Basically, the feasibility value of the business run by live shrimp fishermen after revitalization is lower than before revitalization because the catch was still abundant at that time. Although the catch of live shrimp decreased, fishermen continued the business because it was still profitable and had not reached the break-even point or experienced a loss.

In contrast to the results of research conducted by Imbanop, Y. P., *et al* (2019) in the Kampung Onggaya area of Naukenjerai District, Merauke Regency regarding fishing business. fishing business is profitable, the R / C ratio value of fishing business in Kampung Onggaya Naukenjerai district is 1.08, so the fishing business is feasible.

CONCLUSION

Based on the results of the study, it can be concluded that the amount of production of live shrimp business before the revitalization of kendari bay was 32 kg / month with a total income of Rp. 4,512,410 while after the revitalization of kendari bay is where fishermen get an average production of 18 kg / month with an average total income of fishermen of Rp. 2,412,410 / month.

Live shrimp business income shows that live shrimp fishing business after the revitalization of kendari bay benefits in the efficient use of costs, where the R / C ratio value is greater than one, namely 9.5 so that this business is feasible to run because it gets profit.

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