Analysis of Fishing Business Using Gill Net Fishing Gear in Bogak Village, Tanjung Tiram District, Batu Bara Regency, North Sumatra Province

Analisis Usaha Penangkapan Ikan dengan Menggunakan Alat Tangkap Jaring Insang di Desa Bogak, Kecamatan Tanjung Tiram, Kabupaten Batu Bara, Provinsi Sumatera Utara

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Abstract

The majority of the population of Bogak Village works as fishermen, with 76% of them involved in fishing. The dominant fishing gear used is gill nets, with a total of 500 units. This study was conducted in Bogak Village in 2023 to determine the investment spent by fishermen, the total costs, income, and profits they obtain, and to analyze the feasibility of fishing efforts using gill nets. This research method is a survey method with 21 fishermen as respondents. The results indicate two criteria for the type of fishing business: using 5 GT and 10 GT fleets. The investment for a 5 GT fleet is IDR 78,991,375.00, while a 10 GT fleet costs IDR 232,150,972.22. The total cost of the 5 GT fleet is IDR 525,031,138.89 / year, and the 10 GT fleet is IDR 776,833,809.52 / year. The income of the 5 GT fleet is IDR 581,760,000.00/year, and the 10 GT fleet is IDR 904,106,666.67/year. The profit of the 5 GT fleet is IDR56,728,861.11/year, and the 10 GT fleet is IDR127,272,857.14/year. Based on the feasibility analysis of the gillnet fishing business, both fleet sizes (5 GT and 10 GT) have proven to be profitable with an R/C value above 1. This indicates that the company is feasible to continue and develop. Overall, investing in a larger fleet provides more promising economic prospects for fishermen.

Keywords: Gillnet Fishing Gear, Business Analysis, Fishing

Abstrak

Penduduk Desa Bogak mayoritas bermata pencarian sebagai nelayan sebanyak 76% dan alat tangkap yang dominan digunakan ialah alat tangkap jaring insang, dimana alat tangkap ini berjumlah sebanyak 500 unit. Penelitian ini dilakukan di Desa Bogak pada tahun 2023 dengan tujuan menghitung seberapa besar investasi yang dikeluarkan nelayan, menghitung seberapa besar total biaya, penerimaan dan keuntungan yang diperoleh nelayan, dan menganalisis kelayakan usaha penangkapan ikan yang dilakukan nelayan dengan menggunakan alat tangkap jaring insang. Metode penelitian ini adalah metode survei dengan jumlah responden 21 orang nelayan. Hasil yang diperoleh yaitu terdapat dua kriteria jenis usaha nelayan yaitu dengan mengguanakan armada 5 GT dan 10 GT, investasi yang dikeluarkan menggunakan armada 5 GT Rp78.991.375,00 dan armada 10 GT Rp232.150.972,22. Total biaya armada 5 GT Rp 525.031.138,89/tahun dan armada 10 GT Rp776.833.809,52/tahun. Penerimaan armada 5 GT Rp 581.760.000,00/tahun dan armada 10 GT Rp 904.106.666,67/tahun. Keuntungan armada 5 GT yaitu Rp56.728.861,11/tahun

dan armada 10 GT yaitu Rp127.272.857,14/tahun. Berdasarkan analisis kelayakan usaha nelayan jaring insang kedua ukuran armada (5 GT dan 10 GT) terbukti menguntungkan dengan nilai R/C di atas 1 artinya usaha tersebut layak untuk dilanjutkan dan di kembangkan dan secara keseluruhan, investasi pada armada yang lebih besar memberikan prospek ekonomi yang lebih menjanjikan bagi nelayan.

Kata kunci: Jaring Insang (Gill Net), Analisis Usaha, Penangkapan Ikan

1. Introduction

The fishing business is a planned and systematic activity in the fisheries sector, focusing on catching or collecting fish resources and other aquatic biota for commercial purposes. This activity is a manifestation of human efforts to utilize fishery resources economically and optimally, considering environmental sustainability and the welfare of business actors. In a broader context, the fishing business includes integrated activities ranging from operational planning, preparation of facilities and infrastructure, and implementation of fishing operations to handling and marketing the catch. This activity requires significant investment, including procuring fishing vessels, fishing gear, navigation and fish detection technology, and other supporting equipment. In addition, the fishing business requires skilled and experienced human resources ranging from captains and fishing masters to crew members who understand fishing techniques and sailing safety (Pratama et al., 2023).

Fishing has developed into a dynamic and competitive industry in the modern era. Business actors must continue to innovate and adopt the latest technology to improve operational efficiency and competitiveness. This includes using geographic information systems for mapping fishing areas, modern cooling technology to maintain the quality of the catch, and an integrated fleet management system. In addition, sustainability is a significant concern, as business actors must ensure that fishing activities do not damage the aquatic ecosystem and continue to pay attention to the limits of permitted use. The success of a fishing business is not only determined by technical and operational factors alone. However, it is also greatly influenced by external factors such as weather conditions, fishing seasons, government regulations, and market dynamics. Therefore, risk management and mature business planning are important keys to sustainability. Business actors must also build a strong partnership network with various stakeholders, including suppliers, distributors, financial institutions, and related government agencies (Pratama et al., 2023).

The Gill net is one of the fishing tools widely used in various parts of the world. It has a relatively simple but effective construction. This fishing tool consists of a rectangular net installed perpendicular to the water's surface, equipped with several floats at the top and weights at the bottom to form a barrier wall in the water. The name gill net itself comes from the way the fish are caught in the net, where fish that swim through the net will get caught in the gills when trying to penetrate the mesh smaller than its body's circumference. Gill nets have a unique principle in their operation: the target fish will be trapped (gilled), entangled, or wedged in the net. The effectiveness of the capture is highly dependent on various factors, including the mesh size, height, and length of the net, the material and color of the thread, and the hanging ratio. Gill nets can be operated passively by waiting for the fish to swim into the net or actively by blocking schools of fish. Based on their operating position in the water column, gill nets can be classified into surface, midwater, and bottom gill nets. The advantage of gill nets lies in their high selectivity to the size of the target fish, where the mesh size can be adjusted to catch fish of a specific size. This makes gill nets a relatively environmentally friendly fishing gear because they can reduce the capture of fish that are not yet suitable for fishing. In addition, its simple construction makes the investment and maintenance costs relatively affordable, making it very suitable for small and medium-scale fisheries. Moreover, challenges in operating gill nets include the possibility of ghost fishing if the net is lost or broken, as well as the need for special expertise in determining the fishing area and the right time to set the fishing gear (Rahman & Haluan, 2023).

Bogak Village is one of the villages in Tanjung Tiram District, Batu Bara Regency, North Sumatra Province. Bogak Village is located in a coastal area at an altitude of 10 meters above sea level, covering an area of 53 Ha with 12 hamlets. Bogak Village is 1 km from the sub-district capital and 31 km from the provincial capital. In addition to Bogak Village's great marine natural potential, it also has other local natural resources, such as mangrove forests that can be processed into products with high sales value. Bogak Village has a population of 4,980 people and 1,355 families. The majority of the population of Bogak Village works as fishermen, with 76% of them engaged in this profession. The dominant fishing gear used is gill net fishing gear, with 500 units in total (Bogak Village Head Office, 2023).

This activity requires a considerable investment, including procuring fishing vessels, fishing gear, navigation and fish detection technology, and other supporting equipment. In addition, fishing efforts require skilled and experienced human resources ranging from captains and fishing masters to crew members who understand fishing techniques and shipping safety (Pratama et al., 2023). Based on these conditions, this study is related to the title

"Analysis of Fishing Efforts Using Gillnet Fishing Gear in Bogak Village, Tanjung Tiram District, Batu Bara Regency, North Sumatra Province" to calculate how much investment is spent by fishermen, calculating how much total costs, revenues and profits obtained by fishermen, and analyzing the feasibility of fishing efforts carried out by fishermen using gillnet fishing gear.

2.   Material and Method

2.1. Time and Place

This research was conducted in March 2023 in Bogak Village, Tanjung Tiram District, Batu Bara Regency. The location was selected intentionally (purposively) because Bogak Village, Tanjung Tiram District, Batu Bara Regency, is one of the fishing areas that uses gill net fishing gear.

2.2. Methods

The survey method was used in this study. The survey method is conducted to gather facts from symptoms and obtain actual information in the fisheries and social and economic fields from those involved in the fisheries business. Sugiyono (2019) said the survey method obtains data from certain natural places. However, the study involves treatment in data collection, for example, by distributing questionnaires, texts, and structured interviews, unlike in experiments. The approach used in this study is quantitative. Kalen (2016) explains that the quantitative approach refers to the word quantity. Quantity means the amount or number of something. A quantitative approach means an approach that sums up or collects. In social research, the statistical method is the most precise representation of the quantitative method because it involves a quantification process, namely assigning numbers to the quality of something.

2.3. Data Analysis

2.3.1. Fishermen's Investment in Bogak Village

CPUE Investment comprises fixed capital (MT) and working capital (MK). To calculate the total investment, use the formula of Nugroho & Sari (2023).

$$TI = MT + MK$$

Where:

IT	= Total investment (IDR)
MT	= Fixed capital (IDR)
MK	= Working capital (IDR)

2.3.2. Total Costs, Income, and Profits of Fishermen in Bogak Village

To calculate the total costs, income, and profits obtained by fishermen in running a fishing business using gill net fishing gear in Bogak Village, Tanjung Tiram District, Batu Bara Regency, North Sumatra Province, the Nugroho & Sari formula (2023) is used. The formula used to find the total cost of a fishing business is:

$$TC = TFC + TVC$$

Where: TC   : Total Cost
         TFC : Total Fixed Cost (Total Fixed Cost)
         TVC : Total Variable Cost (Total Variable/Non-Fixed Cost)

The following is the formula used to find the income earned by fishermen:

$$TR = PQ$$

Where: TR   : Total income (IDR)
         P   : Product price (kg)
         Q   : Total Sales (IDR/Kg)

The formula used to find the profit of a fishing business is:

$$\pi = TR - TC$$

Where: π : Profit (advantage)
         TR : Total revenue (total receipts)
         TC : Total cost (total cost)

2.3.3. Feasibility of fishing businesses in Bogak Village

Analyzing the feasibility of fishing businesses carried out by fishermen using gill net fishing gear in Bogak Village, Tanjung Tiram District, Batu Bara Regency, using the formula Arifin (2023). Revenue cost ratio(R/C) is the comparison between revenue and total costs. The following formula is used:

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

Where: RCR   = Revenue Cost Ratio

TR   = Total Revenue or acceptance
TC   = Total Cost (Fixed Cost)

With business criteria: R/C > 1 indicates the business is profitable and worth continuing; R/C < 1 indicates the business is experiencing losses and is not worth continuing; R/C = 1 indicates the business reaches a break-even point. Return on Investment (ROI) is a value used to determine the profit obtained by fishermen from each amount of money invested in a specific period; the formula used for Return on Investment (ROI) is:

$$\text{ROI} = \frac{\text{Profit}}{\text{Total Cost}} \times 100\%$$

If RoI < 1, then the fishing business is not feasible. If RoI = 1, then the fishing business is feasible. Furthermore, if ROI > 1, then the fishing business is very feasible to be attempted (Imron, 2018).

Return on Investment (ROI) is a value used to determine the profit obtained by fishermen from each amount of money invested in a specific period; the formula used for Return on Investment (ROI) is Capital (PPC). The payback Period of Capital (PPC) is calculated using the formula to see how long it takes to return capital:

$$\text{PPC} = \frac{\text{TI}}{\text{JI}} \text{x period}$$

Where: PPC   = Payback Period of Capital
        IT   = Total Investment
        JI   = Profit
        Period   = Long time business time

Decision criteria: The investment is rejected if the value of the payback period is greater than the economic life. The investment is accepted if the value of the payback period < economic life. So, the payback period method assesses that if the payback period is smaller than the maximum time required, the project is accepted, and vice versa. The investment is rejected if the payback period is more extended than required (Nainggolan, 2018).

3. Result and Discussion

3.1. Characteristics of Gillnet in Bogak Village

Bagan. The condition of the gillnet fishing business in Bogak Village can be described through several important characteristics related to fishing operations in the area. Regarding fishing fleets, fishermen operate two sizes of ships, 5 GT and 10 GT, each with different specifications and fishing capacity. The price of a 5 GT fleet is IDR 34,958,333.33, and a 10 GT fleet is IDR 135,000,000.00. The primary construction material is wood, the primary basic material for making ships, using Meranti wood for the base frame and hull because it has good resistance to seawater; teak wood is used for the deck and superstructure of the ship because it is weather-resistant and has high durability, and peep at wood for the ship's keel because of its strong and waterproof characteristics.

Supporting components include fiberglass, which is applied as a protective layer on the ship's hull to prevent water seepage, protect the wood from destructive organisms, and increase the ship's durability and service life. Metal materials use galvanized iron for nails and joint reinforcements, stainless steel for navigation and deck equipment, and aluminum for several lightweight and rust-resistant components. Combining wood with a fiberglass layer provides good resistance to sea conditions while maintaining relatively affordable manufacturing and maintenance costs for local fishermen. Technical specifications for the 5 GT fleet include a ship length of 8-10 meters, a ship width of 2-2.5 meters, a ship height of 1-1.5 meters, and a 16-24 PK diesel engine. For the 10 GT fleet, the ship length is 12-15 m, the ship width is 3-3.5 m, the ship height is 1.5-2 m, and it is equipped with a 24-30 PK diesel engine.

Gillnet fishing gear is a standard tool used by fishermen in Indonesia, including in Bogak Village. For a 5 GT fleet, the specifications of the gillnet used have special characteristics that are adjusted to the ship's capacity. Gillnets for the 5 GT fleet generally have a length of 300 to 500 m, a net height or depth of 4 to 6 m, and a net width of 4 to 6 m. The mesh size used usually ranges from 2 to 4 inches, adjusted to the type of target fish caught. The material used for this net is either monofilament or multifilament thread, with the thickness adjusted to provide the strength needed to withstand the weight of the fish caught. For a 10 GT fleet, the specifications of the gillnet used are larger due to the increased ship capacity. The net length of a 10 GT ship can reach 800-1,200 meters with a net height or depth of around 6-8 m and a net width of around 4-6 m. The mesh size is generally larger, ranging from 3 to 5 inches. The materials used are predominantly multifilament, offering higher strength to withstand a greater catch load.

Fishermen of Bogak Village operate gill nets with characteristics that are adjusted to the water conditions and types of target fish. The construction of the gill net consists of several main components: the upper rope (float line) equipped with a float to float the net, the lower rope (sinker line) equipped with a weight to sink the net, and the net body made of multifilament or monofilament yarn. Fishing operations in Bogak Village have characteristics and patterns that have evolved from generation to generation, continuing to adapt to advancements in fishing technology. Fishermen in Bogak Village generally carry out fishing operations with a one-day fishing system. Fishing activities begin in the early morning around 03.00-04.00 WIB. The fishermen prepare various necessities for going to sea, such as fuel, ice to preserve the catch, and food supplies, before leaving for the fishing ground.

Upon arrival at the intended fishing ground, the fishermen will begin lowering the fishing gear (setting it up). For gillnet operations, the setting process involves first lowering the marker buoy, then slowly lowering the net in the direction of the current. This setting process takes about 1-2 hours, depending on the net's length. After all the nets are installed, the fishermen will leave the net and drift with the current (drifting) for 2-3 hours to allow the target fish to enter the net. The hauling begins by lifting the marker buoy, and then the net is slowly pulled while taking the caught fish. This hauling process is quite tiring and takes 2-3 hours, depending on the number of catches obtained. The caught fish are immediately cleaned and sorted by type and size. The process of handling the catch on board is critical to maintaining the quality of the fish. Fishermen of Bogak Village use prepared ice to preserve the catch. The fish are arranged in layers with ice in a box, or they are held to maintain their freshness until they return to the dock.

In one month, fishermen fish for 24 days, and for 10 months in one year. The peak fishing season lasts 6 months, starting from March to May, which is the beginning of the first peak season, and then continues from September to November, the second peak season. The lean season or off-season for fishing lasts 4 months, from December to February and June to August. From December to February, which coincides with the west wind season, water conditions are characterized by bad weather, strong winds, and high waves that limit fishing activities. The remaining two months, July and August, are the transition period, often referred to as the transition season. During this period, gillnet fishermen in Bogak Village used this time to carry out various preparations, including repairs and maintenance of ships and gillnet fishing gear.

5 GT vessels with dimensions of 8-10 meters long and 2-2.5 meters wide operate 300-500 meters gillnets with a mesh size of 2-4 inches and apply a one-day fishing pattern for 24 days a month. 16-24 HP diesel engines limit the range of operations in near-shore waters and require 3-5 crew members. A larger 10 GT vessel (12-15 meters long, 3-3.5 meters wide) uses gillnets of 800-1,200 meters with a mesh size of 3-5 inches, making eight monthly trips, each lasting 3 days. Supported by 24-30 HP engines, this vessel can reach further fishing grounds and requires 5-8 crew members to operate it.

3.2. Production of Catch Result

Based on data on fish production caught by fishermen in Bogak Village, three main types of fish are the target catch: mackerel, tuna, and mackerel. For the 5 GT fleet, the highest production was achieved by mackerel, with 26 kg per trip during and 11 kg per trip outside the season. Meanwhile, the 10 GT fleet showed higher productivity, with mackerel reaching 53 kg per trip during and 23 kg per trip outside the season. Average fish production from gill net fishermen can be seen in Table 1.

Table 1. Average Fish Production from Gill Net Fishermen

No	Fishermen's Catch	Fishermen's Production (5 GT Fleet)		Fishermen's Production (10 GT Fleet)	
		Season	Out of Season	Season	Out of Season
1	Mackerel	26	11	53	23
2	Mackarel tuna	21	12	42	22
3	Mackerel	16	9	32	18
	Kg/Trip	64	32	128	63
	Kg/Month	1.530	774	3.067	1.515
	Kg/Year	9.180	3.096	18.400	6.059
	Total/Year	12.276		24.459	

The 5 GT fleet's total production per trip was 64 kg in season and 32 kg off-season, while the 10 GT fleet produced 128 kg per trip in season and 63 kg off-season. This shows that the larger fleet (10 GT) has almost double the catch capacity compared to the 5 GT fleet. Annual production shows a significant difference between the two fleet types. The 5 GT fleet produced a total of 12,276 kg per year (9,180 kg in season and 3,096 kg off-season), while the 10 GT fleet produced 24,459 kg per year (18,400 kg in season and 6,059 kg off-season).

Fishermen's investment consists of two main components: fixed capital and working capital. For a 5 GT fleet, the fixed capital required is IDR 76,920,833.33, and the working capital is IDR 1,065,750.00, so the total investment reaches IDR 77,986,583.33. Meanwhile, the 10 GT fleet requires a much larger investment, with a fixed capital of IDR 229,200,000.00 and a working capital of IDR 1,714,888.89, bringing the total investment to IDR 230,914,888.89. The Average Investment of Gill Net Fishermen can be seen in Table 2

Table 2. Average Investment of Gillnet Fishermen

No	Investment Components	Fisherman's Capital (5 GT Fleet) (IDR)	Fisherman's Capital (10 GT Fleet) (IDR)
1	Fixed Capital	76,920,833.33	229,200,000.00
2	Working capital	1.065.750,00	1.714.888,89
	Investment (IDR)	77.986.583,33	230.914.888,89

Fixed costs for fishermen with a 5 GT fleet reach IDR 28,101,138.89 per year, while a 10 GT fleet requires IDR 68,600,476.19, which is about 2.4 times larger. The most significant component in fixed costs is gillnets, valued at IDR 20,247,666.67 for a 5 GT fleet and IDR 42,933,333.33 for a 10 GT fleet. The Average Total Cost of Fishermen can be seen in Table 3.

Table 3. Average Total Cost of Fishermen

No	Fixed Cost Components	Fisherman Fleet 5 GT Fixed Cost (IDR/Year)	Fisherman Fleet 10 GT Fixed Cost (IDR/Year)
1	a. 5 GT ship	4.078.472,22	15.750.000,00
	b. Ship Engine	2.540.000,00	7.257.142,86
	c. Gill Net	20.247.666,67	42.933.333,33
	d. Box	1.235.000,00	2.660.000,00
	Amount (IDR)	28.101.138,89	68.600.476,19
2	Variable Cost Components	Variable Costs (IDR/Year)	Variable Costs (IDR/Year)
	a. Solar	27.300.000,00	42.466.666,67
	b. Consumption	56.300.000,00	78.986.666,67
	c. Manpower	160.000.000,00	272.000.000,00
	d. Ice	12.180.000,00	18.120.000,00
	Amount (IDR/Year)	255.780.000,00	411.573.333,33
	Total Cost (IDR/Year)	283.881.138,89	480.173.809,52

Variable costs show a more significant difference between the two types of fleets. Fishermen of the 5 GT fleet spend variable costs of IDR 255,780,000.00 per year, while the 10 GT fleet reaches IDR 411,573,333.33 or around 61% higher. The most significant component in variable costs is labor, where the 5 GT fleet spends IDR 160,000,000.00 and the 10 GT fleet IDR 272,000,000.00 per year. Revenue per trip for the 5 GT fleet ranges from IDR 1,299,166.67 (off-season) to IDR 1,683,333.33 (season), while the 10 GT fleet earns IDR 2,545,555.56 (off-season) to IDR 3,366,666.67 (season) per trip. Of the three types of fish caught, mackerel provides the highest income for both fleets. The Average Income of Gill Net Fishermen can be seen in Table 4.

Table 4. Average Income of Gill Net Fishermen

No	Fishermen's Catch	Fishermen's Reception (5 GT Fleet) (IDR/Year)		Fishermen's Reception (10 GT Fleet) (IDR/Year)	
		Season	Out of Season	Season	Out of Season
1	Mackerel	523.333,33	340.000,00	1.062.222,22	680.000,00
2	Mackarel tuna	425.000,00	414.166,67	844.444,44	785.555,56
3	Mackerel	735.000,00	545.000,00	1.460.000,00	1.080.000,00
	IDR/Trip	1.683.333,33	1.299.166,67	3.366.666,67	2.545.555,56
	IDR/Month	40.400.000,00	31.180.000,00	80.800.000,00	61.093.333,33
	IDR/Year	242.400.000,00	124.720.000,00	484.800.000,00	244.373.333,33
	Total/Year	367.120.000,00		729.173.333,33	

Annual revenue shows a significant difference between the two fleets. The 5 GT fleet earns a total revenue of IDR 367,120,000.00 annually, while the 10 GT fleet reaches IDR 729,173,333.33 annually. In terms of profit, the 5 GT fleet earns a total revenue of IDR 367,120,000.00 per year, with a total operating cost of IDR 283,881,138.89, resulting in a net profit of IDR 83,238,861.11 per year. Meanwhile, the 10 GT fleet demonstrates significantly better financial performance, with a total revenue of IDR 729,173,333.33 per year and a total operating cost of IDR 480,173,809.52, resulting in a net profit of IDR 248,999,523.81 per year. The Average Profit of Gill Net Fishermen can be seen in Table 5.

Table 5. Average Profit of Gill Net Fishermen

No	Profit Components	Fishermen Fleet 5 GT (IDR/Year)	Fishermen Fleet 10 GT (IDR/Year)
1	Reception	367.120.000,00	729.173.333,33
2	Total cost	283.881.138,89	480.173.809,52
	Profit (IDR/Year)	83.238.861,11	248.999.523,81

3.3. Gillnet Fishery Business Feasibility

For the 5 GT fleet, the R/C value of 1.2 indicates that every rupiah spent generates an income of IDR 1.20, while the 10 GT fleet has an R/C of 1.5, meaning that every rupiah generates IDR 1.50. Both values indicate that the business is economically feasible because R/C > 1. Both fleets showed the same results for the payback period of capital (PPC), which was 0.9 years or around 11 months, meaning that the investment capital can be returned in less than one year. The business feasibility of Gill Net fishermen can be seen in Table 6.

Table 6. Feasibility of the gillnet fishermen's business

No	Feasibility Components of Gillnet Fishermen's Business	Fisherman Fleet 5 GT	Fisherman Fleet 10 GT
1	*Revenue Cost Ratio* (R/C)		
	a. Income (IDR/Year)	367.120.000,00	729.173.333,33
	b. Total Cost (IDR/Year)	283.881.138,89	480.173.809,52
	c. R/C	1.2	1.5
2	*Return on Investment* (ROI)		
	a. Profit (IDR/Year)	83.238.861,11	248.999.523,81
	b. Total Cost (IDR/Year)	283.881.138,89	480.173.809,52
	c. ROI	29.32	51.85
3	*Payback Period of Capital* (PPC)		

a. Total Investment i (IDR/Year)	77.986.583,33	231.200.166,67
b. Profit (IDR/Year)	83.238.861,11	180,532,857.14
c. PPC	0,9	0.9

4. Conclusions

Overall, the feasibility analysis indicates that the gillnet fishery business in Bogak Village is highly feasible, with a 10 GT fleet offering greater efficiency and profitability than a 5 GT fleet. The relatively short payback period and high ROI make this business an attractive investment option for fishermen. A comparison of the three indicators consistently shows the economic superiority of the 10 GT fleet in all aspects of business feasibility. A larger fleet provides better operational efficiency, a higher rate of return on investment, and a faster payback period. This indicates economies of scale in the gillnet fishery business, where expanding the business provides greater proportional benefits.

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