

Productivity and Financial Analysis of Fishing Effort with Handline at Kutaraja Oceanic Fishing Port Aceh Province

Angga Setia Manalu^{1*}, Jonny Zain¹, Arthur Brown¹

¹Department of Utilization of Fisheries Resources, Faculty of Fisheries and Marine, Universitas Riau, Pekanbaru 28293 Indonesia

*anggasetiamanalu@gmail.com

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Abstract

Production of catches on hand line fishing gear at Kutaraja Ocean Fishing Port has declined. This is seen from the level of fish production produced, which was 2.407.580 tons in 2018, compared to in 2019 which was 2.285.750 tons. The fishing business, which has become one of the livelihoods of the Indonesian people, is a little riskier than other businesses because the fish, which are the play target of this business, are constantly moving dynamically. The research objective was to determine productivity per GT, Trip, and ABK on hand line fishing gear and to determine the financial feasibility analysis of fishing effort on hand line fishing gears at Kutaraja Ocean Fishing Ports. The benefits of this research are to increase knowledge and insight regarding productivity and financial analysis of the fishing line effort. The method used in this study is a survey method. The data analysis method used in this research is descriptive. The results showed that the value of productivity per trip with large-size ships has a high amount of production compared to smaller ship sizes. Hand line fishing with a vessel size >30 GT has a relatively long payback period, <5 years. While ships with a height of 5 GT, 6 GT, 9 GT, 22 GT, and 24 GT have a payback period of <3 years.

1. Introduction

One of the fishing ports that have sufficient production of caught fish in Aceh is an Ocean Fishing Port (PPS) Kutaraja, which is included in the WPP 572 fisheries management area with over-exploited status for fish pelagic and fully used for demersal fish. PPS Kutaraja, which is located in Banda City Aceh ha, is a very strategic location directly opposite the Strait of Malacca and the Indian Ocean (Kurnia, 2019).

Fajri et al. (2018) also stated that PPS Kutaraja is close to potential fishing areas (DPI) and deals directly with international shipping lanes. Seeing the potential of PPS Kutaraja, the central government was assisted by UPTD PP Kutaraja. The Central Government and the Government of Aceh took a concrete step, namely in 2014, Harbor Kutaraja Fisheries which long to PPS Current Kutaraja (KKP, 2014). Port change this resulted

in an increase in the port's status, namely from a class C fishing port to a class A in 2016.

Production of catches on handline fishing gear at PPS Kutaraja experienced a decline. This seen from the level production of fish, Which generated that is as much as 2.407.580 tons in 2018 compared to the production year 2019, which is as big as 2.285.750 tons (PPS Kutaraja, 2019). According to Inizianti (2010), the operation of hand fishing is by hooking bait on a fishing rod that has been attached to a rope and sinking it into the water. When fish eat bait, then the eyes, and the fishing line will get caught in the fish's mouth, and the fishing line will be pulled in the boat. The vessels commonly used in operating hand-line fishing gear are boats, traditional wooden boats, or outboard motor boats. According to Rahmat & Agus (2013), the type of catch from hand line fishing is dominated by yellowfin tuna (*Thunnus albacares*) and Skipjack Fish

(*Katsuwonus pelamis*) because they are target fish catch for part type fish other caught, like mackerel (*Scomberomorus commerson*), tongkol (*Auxis thazard*), manyung (*Arius thalassimus*), and sharks (*Carcharhinus spp.*). The number of fishing gear at Kutaraja PPS also experienced an increase from 2019, which only had 371 units, the number of tools catches fishing rods as many as 71 units, increased become 531 units, and tool grab fishing rods as many as 237 units in 2020 (PPS Kutaraja, 2020).

The research objective was to determine productivity per GT, Trip, and ABK on hand line fishing gear and to determine the financial feasibility analysis of fishing effort on hand line fishing gears at Kutaraja Ocean Fishing Ports. The benefits of this research are to increase knowledge and insight regarding productivity and financial analysis of the fishing line effort.

2. Methodology

2.1. Time, Place, and Materials

This research was carried out in October 2021 at the Kutaraja Fishing Port City Banda Aceh Province Aceh. The tools used in this research include stationery, cameras, and laptops. Whereas the material used is data secondary and data primary from the results questionnaire.

2.2. Method

The research method used in this research is a survey method by conducting observation directly in the field, getting primary and secondary data, and doing interviews by preparing a sheet questionnaire for asked fisherman businesses that used fishery fishing rod stretch.

2.3. Procedure

Collection data. The data collected in the research is data production factors and catches Handline fishing equipment at PPS Kutaraja. This data includes ship size (GT), number of Crew, number of fishing trips, age of fishing gear, GPS, Echosounder, and vessel used. Data Catch results are obtained from the catch logbook. Meanwhile, data on the amount of fuel, amount of ice, amount consumption, amount of oil, amount of water, and amount of salary were obtained through interviews and observations. Based on data obtained from PPS Kutaraja, there are 87 handline fishing vessels.

However, only ten units were used as research samples to represent others of various sizes of GT boats.

Processing and analysis of data. Data analysis in this research is a descriptive analysis method. The productivity value of this research can be determined by calculating the average catch of the fishing unit's line fishing for a year and fishing efforts in the form of fishing trips, boat size used, and the number of fishing trips

2.4. Data Analysis

Analysis productivity. According to the Decree of the Minister of Maritime Affairs and Fisheries No. 38 of 2003 (KEPMEN, 2003), The productivity of fishing vessels is also determined by considering the tonnage size of the ship, type of ship material, power of ship engine, type of fishing gear used, number of trips operation arrest per year, ability catch average per trips/month And region arrest. Calculations can be done using the equation as follows:

$$\begin{aligned} \text{Productivity per GT} &= \frac{\Sigma \text{ Production}}{\text{tonnage of ship}} \\ \text{Productivity per Trip} &= \frac{\Sigma \text{ Production}}{\text{trip}} \\ \text{Productivity per crew} &= \frac{\Sigma \text{ Production}}{\Sigma \text{ABK}} \end{aligned}$$

Feasibility analysis business to use tool catch fishing rod stretch. According to Ahmad et al. (2015), for count efficiency economy can use the formula:

$$\text{BCR} = \text{Total output} / \text{Total input}$$

Information:

Total output = Amount all over results or reception Which obtained of production times price

Total input = Amount all over cost or expenditure issued For process production or arrest.

With criteria are as follows: $\text{BCR} \geq 1$, the ship is ship efficient; $\text{BCR} < 1$, the ship is not efficient.

In this research, the output is fish caught or fish production, which was arrested with tools seen with a hand line. The fish prices used are the prevailing fish prices when the research was conducted. Meanwhile, the input is all costs or expenses incurred for the fishing production process, covering fuel, ice cooler, oil, supplies during going to sea, workers, etc.

Total input also can said as total costs, where for count or know total input issued countable by following:

$$TC = FC + VC$$

Information:

TC = Total cost

FC = Fixed cost

VC = Variable cost

Meanwhile, to find out what is obtained from product sales (catch) with the selling price of fish calculated in year/period (Suratiyah, 2006) with the formula as follows:

$$GI = Y \times Py$$

Information:

GI = Gross income

Y = Quantity

Py = Price

Apart from that, it is used to determine the level of efficiency of a business that needs to be viewed from other aspects, such as in terms of investment and the length of return on capital. Extended return of capital influences the efficiency of fisheries businesses and what will be done and is one of the considerations for carrying out a fishing business.

Payback period of money (PPC). The following calculations are used (Soekartawi, 1995):

$$\text{Total investment} = MT + MK$$

Information:

IT = Total investment

MT = Fixed capital

MK = Capital work

According to Robinson & Secokusumo (2001), cost shrinkage is the cost purchase of equipment used by the business owner divided by economic life, aims To take into account the decline period benefit equipment Which used Because usage, the useful life can be expressed in terms of periods such as months and year. Cost shrinkage can be calculated by using the formula:

$$D = c / n$$

Information:

D = Cost shrinkage (IDR/year)

c = Price tools (IDR)

n = Age of tool (Years)

A payback period is required for close return expenditure investment using Genre cash net. Thereby, the payback period of an asset by describing the length of time necessary for the funds to be invested embedded in an investment can get a return in its entirety

(Riyanto, 2010). Net income (NI) is the difference between gross income (GI) and total costs Issued (TC) with the formula as follows:

$$NI = GI - TC$$

Information:

NI = Net income (Net income of fishermen per year)

GI = Gross income (Income dirty fisherman per year)

TC = Total costs or production costs

The smaller the PPC, the faster the return on capital; this means the business is profitable and can be one of the considerations in measuring efficiency. The calculation uses the formula:

$$PPC = \frac{1}{NI} \times year$$

Information:

PPC = Payback period of capital

I = Investment fisherman

NI = Net income

Criteria: payback period < 3 years: fast return on business capital; payback value for period 3–5 years: moderate return on business capital; payback period > 5 years: return capital slow business.

3. Result and Discussion

3.1. Productivity Tool Catch Fishing Rod Handle

Based on Figure 1, it can be seen that the productivity value per gross tonnage is the highest for a boat, Which is size 6 GT, with productivity per gross tonnage as enormous as IDR 240.437.167,-. Meanwhile, the smallest productivity value per gross tonnage the smallest is a boat with size 35 GT with productivity per gross tonnage as enormous as IDR 57.632.114.

In Figure 1, we also can see the correlation between connection productivity per gross tonnage and the size of the ship, which has an R-value of 2 0.9559 and an r (correlation coefficient) of 0.9777. Then the correlation coefficient is 0.9777, which shows the relationship between ship size and productivity per gross tonnage. Productivity per amount of trip can be seen in Figure 2.

Based on Figure 2, it can be seen that the productivity value per trip is the highest for a ship of size 24 GT with productivity per trip of IDR 123.223.000. Meanwhile, the most low-value productivity is a boat with size 5 GT with productivity IDR 55.221.158,-per trip.

Correlation between connection Productivity per trip with ship size is R-value 2 0.7198 and r (correlation coefficient) is 0.8484 which

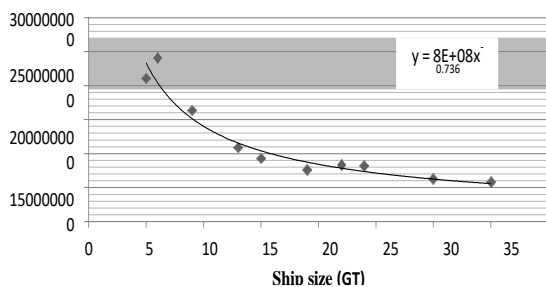


Figure 1. Productivity per gross tonnage

shows exists relationship between size boat and productivity per trip. Productivity per crew member can be seen in Figure 3.

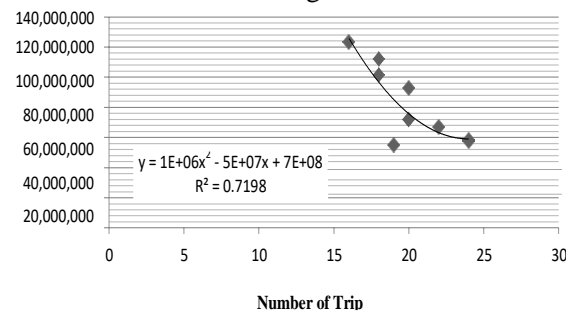


Figure 2. Productivity per amount of trip

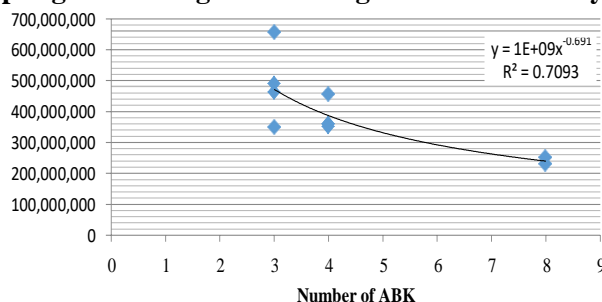


Figure 3. Productivity per crew

The significant productivity is a boat with a size of 35 GT, and the greatest productivity is a ship with a 5 GT. According to Kisworo et al. (2016), mark productivity grouped becomes 3, i.e., productivity per tonnage (GT), crew productivity, and productivity per trip. This value is influenced by the number of catches (volume production) and amount mark production for one year, size of ship or GT, total crew during one year, and number of trips for one year.

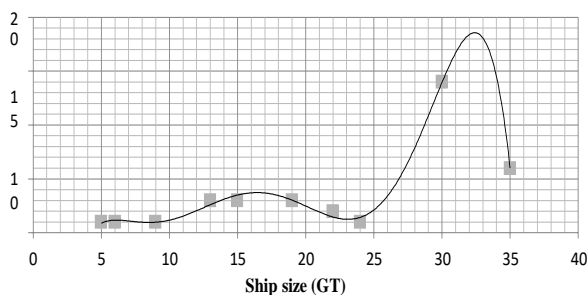


Figure 4. Payback Period Value for Hand line Catching at PPS Kutaraja

This indicates that the boat with a length of 24 GT and down has a payback period of less than five years. Average Payback Period (PPC) for hand line fishing at the Port Fishery

3.2. Appropriateness business tool catch fishing rod stretch

Based on Figure 4, it can see that mark PPC is ship measuring 24 GT. While the lowest PPC value is a ship with a size of 30 GT. Judging from the graph, ships with W_{sized} of 30 GT and 35 GT have PPC values until number 14, Which states that boats with the size of their return on capital is relatively long, namely more than five years. But on size for ships 24 GT and below, the PPC value does not reach number 4.

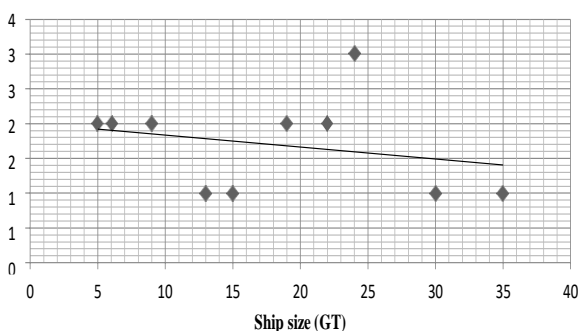


Figure 5. The Efficiency of Hand Line Fishing at the Port Fishery Ocean Kutaraja

Ocean Kutaraja is 3.5. It means time in need. The cost refund investment used is about 3–5 years (Figure 5). Based on Figure 4, it can be seen that a boat with a size of 24 GT has the

highest efficiency value, and ships with a length of 30 GT and above have an efficiency value. Results of the economic efficiency value of the hand line fishing business showed 1 to 3, with an average efficiency of 1.7. From the efficiency value obtained, the fishing effort with hand fishing gear (hand line) is very efficient and profitable.

A study done on boat fishing rod stretch (hand line) showed the efficient value. It is said to be efficient because the efficiency value of hand-line fishing vessels at PPS Kutaraja by >1 . In a study by Mohu et al. (2016) analysis of financial business catching fisheries using hand-line fishing gear on Dudepo Island, Gorontalo Utara Regency, the rate of return on capital is said to be medium because the Payback Period (PPC) value is 0.3. Still, this value is less than 0.5/year. The efficiency criteria, according to Pramudya (2001), are not worth it If <1 , and if >1 , then effort that worth continuing.

4. Conclusion

The average productivity of ships per GT is IDR 117.449.653, the average productivity of the average ship per trip is IDR 81.239.482/trip, and the average ship productivity per crew is IDR 397.341.625,-/crew member. Analysis efficiency from the results study shows that the average BCR is 1.7, where an efficiency value of more than one > 1 would be said to be profitable. So try to arrest hand lines at PPS Kutaraja. It can be categorized as profitable. From the study, it can also be seen that ships with a size of 30 GT and above are less efficient because of the significant expenditure costs; this can be seen in the ship sizes of 30 GT and 35 GT, where the efficiency value is lower. From this research, it can also be seen that the payback period value average is 3,492, which means the payback period for fishing efforts with tool catch fishing is not enough from five years or period return capital business currently

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