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Income analysis of catching fish using dogol (demersal danish seine) in the sub-district of Brondong, Lamongan

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Abstract. The potential for the marine and fishery resources in Lamongan is quite large.. Brondong Village is one of the villages in Brondong Sub-district, Lamongan District, where most of the people work as fishermen. Commonly-used fishing gear includes dogol (Demersal Danish Seine), payang (trawl), carrying nets and fishing rods (longline). This study aims to determine the results of the analysis of the operating revenue of the fishermen fishing when using dogol (Demersal Danish Seine) and the factors that affect the income of fishing effort using the dogol fishing gear (Demersal Danish Seine). The research method was conducted using the survey method. The respondents were determined through Simple Random sampling; every individual had the same opportunity to be sampled, as the individuals all had the same characteristics. The results showed that in the analysis of the operating revenue associated with using dogol (Demersal Danish Seine), in Brondong Village it was found that the average total cost incurred by the fishermen (boat owner) once a trip was Rp 41,110,400. The average profit was Rp 80,280,500. The average value of R / C was 2.85, which means that the fishing effort using the dogol fishing gear in Brondong Village was able to be run.

1. Introduction

Most people in the Indonesian region work as fishermen from generation to generation. The characteristics of the fishing community are shaped by the dynamic traits that they work within. To achieve maximum results, the fishermen must continually move around. In addition, a high level of risk causes people to fish in a natural environment that is always covered by uncertainty when it comes to running their business [1]. Theoretically, with such a large marine wealth potential available, the fishermen are able to live well. However, only a small part of the population lives well; for the rest, most of what is available cannot be used as it is not sufficient, including in terms of education. The utilization of resources, especially marine fish, is still being continually renewed by agricultural businesses with small jobs, and simple and productive technology applications at a relatively low level [2].

The potential of the marine and fishery resources in Lamongan is quite large. However, its utilization has not been maximized due to the various factors that surround it, such as the lower quality of the accessible science and technology. This is characterized by low levels of education, low access to capital, the surrounding socio-economic conditions and damage and the physical damage to the environment.

Brondong Village is one of the villages in Brondong Sub-district, Lamongan District, where some of the people work as fishermen. The boats reach as many as (364 units). The fishing gear used in the village includes dogol (Demersal Danish Seine), payang (Trawl), carrying nets, and fishing lines (longline). The fishermen's activities are usually carried out every day starting at 3:00 a.m. and going on until 3:00 p.m using 5GT hard boats [3]. In 2015, the fish caught using the dogol fishing gear totaled 60,245 tons. Compared to 2014's overall catch of 64,317 tons, this indicates a decline of 6.3% [4]. This greatly affects the results of the fishermen who use the dogol fishing gear. Therefore, the fishermen's income becomes more important to determine the details of when related to dogol (Demersal Danish Seine) in the village of Brondong. The business feasibility analysis conducted in the field was focused on the use of the dogol (Demersal Danish) and pukat fishing gear.

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2. Materials and methods

2.1. Location determination and data collection

The research location was Brondong Village, Brondong District, Lamongan Regency in East Java Province. The research location was chosen purposively. This research study was conducted between April 18th and April 21st, 2017. The researcher conducted a questionnaire test between April 8th and April 12th, 2017. The data collection method was carried out by surveying 39 skipper fishermen who used the dogol fishing gear. The data collected was made up of both primary data and secondary data. The primary data was collected through interviews using a list of questions (questionnaires) that had been pre-prepared. The secondary data was obtained from various sources such as documents and publications from relevant agencies.

2.2. Analysis method

According to [5], the analysis of the fisheries business was a financial examination in order to find out where and whether success had been achieved in the fishery business. In the fishery business analysis, the components included production costs, business revenues and the income derived from the fisheries. In the business analysis, the analysis of R / C (Revenue Cost Ratio), B / C (Benefit Cost Ratio), the analysis of the return on capital PP (payback period) and the Break Event Point (BEP) for production was analyzed. The business analysis was calculated based on the data gathered from interviews with the fishermen. The data was processed using SPSS version 16.00.

3. Results and discussion

3.1. Income of the fisheries business using the dogol fishing equipment

The fishery business is the main source of income for fishermen in the area, in addition to other sources of income from farming activities, construction work, trade and motorcycle taxi driving. This reflects that the capture fishery business has long been cultivated by fishermen in a hereditary pattern. The fisheries business is still an export-oriented commodity. The role of the commodity, in addition to being a source of the fishermen's income, is also a source of local revenue (PAD). The fisheries business that is occupied by the fishermen in Brondong Village is still largely dominated by small-scale businesses, a low access to capital, simple technology, is greatly influenced by seasonal rhythms and a limited amount of production when it comes to local consumption. Running a fishing business cannot be separated from a number of costs that must be incurred. These costs consist of fixed production costs, fixed investment costs, and variable costs.

Fixed production costs include ship or boat maintenance and fishing gear maintenance. The salary of the crew is an average of Rp. 26,300,000 per trip. Fixed investment costs include boat rental costs, fishing gear rental, GPS etc. with the average investment cost per year being Rp 17,992,300. The variable costs incurred include the cost of spending on gasoline, kerosene, ice blocks, PPN / TPI levies and any other materials needed for fishing to the amount of Rp. 17,564,000 per trip. The total costs incurred will affect the size of the fisherman’s income.

3.2. Analysis of income of catching business using dogol

The business analysis carried out on the fishermen using dogol in Brondong Village aimed to find out the potential of the fishing efforts carried out in the area. Based on the results of the business analysis, the feasibility of the business being carried out can be determined. The business analysis was calculated by looking at the Total Operating Costs, Profit (Profit), R / C Ratio, B / C Ratio, PP (Payback Period) and BEP Production.

The total operational value obtained from the interview results came from the fixed costs of production + variable costs. The total operational value showed the highest value and lowest value for each fisherman (ship owner). The highest total operational value was Rp. 69,010,000 per trip and the lowest total operational value was Rp. 6,153,000 per trip with an average of the total operational costs being Rp. 41,110,460 per trip.

The profit value was obtained from the revenue - total operational costs obtained by each fisherman (ship owner). There was no minus value (-) for each fisherman, and the highest profit value was Rp. 297,045,000 per trip. The lowest profit value was Rp. 5,097,000 per trip and with an average of Rp. 80,280,564 per trip.

The results of the calculations in this study found that the average R, C value of R and the C Ratio was > 1. This shows that the business carried out was feasible enough to continue. The higher the R / C value, the higher the level of profit obtained. The calculation results in this study indicate that the value of the B / C Ratio for each fisherman (ship owner) can be used to conclude that the fishing efforts made using the dogol fishing gear is feasible to continue or run. However, it does need improvements and a thorough evaluation. The highest score was 4.71, meaning that the business was feasible to continue. The lowest value was 0.12, which indicates that the business was not feasible to run and that it still needs improvement in the context of the management and the capture process using the dogol fishing gear. Based on the average of the B / C Ratio, all of the respondents came to 1.85, indicating that the fishing efforts were feasible to continue.

The results showed that the dogol fishermen in Brondong village received an average value of PP, which was approximately 6-7 months to return the investment costs that had been incurred in the fishing efforts using the dogol fishing gear. Based on the results of the calculations regarding the value of the BEP of Production for each fisherman (ship owner), an average of 0.42 was obtained. The highest BEP Production value was 0.86 and the lowest BEP Production value was 0.17. From the results of the average BEP Production - 0.42 - it can be interpreted that each fisherman (ship owner) could produce catches using the dogol fishing equipment with a value of 0.42 tons. When conducting the fishing business using the dogol fishing equipment, the fishermen got successful BEP results or even a break-even point of sale achieved at the time of production. The SPSS table can be seen in Table 1.

Table 1. The SPSS Table of the business opinion analysis using the dogol catching tools descriptive statics

	N	Minimum	Maximum	Sum	Mean	Std. Deviation
Age	39	21	60	1956	50.15	8.555
Experience	39	3	48	1183	30.33	12.952
Profit	39	5097000	297045000	3130942000	80280564.10	71632367.585
R/C	39	1.126	5.718	111.229	2.85203	1.132634
B/C	39	.126	4.718	72.229	1.85203	1.132634
PP	39	.069	4.194	26.771	.68644	.895212
BEP Production	39	.175	.888	16.194	.41523	.184178
Total cost	39	6153000	69010000	1603308000	41110461.54	17746494.336
Valid N (listwise)	39					

3.3. Factors and problems

For the fishing businesses that use the dogol fishing gear, the main category of factors that becomes an obstacle is natural factors such as the weather and the changing seasons. Fishing, which is the main source of production supply for the fish business, means that the sea water consumption is often constrained due to weather problems such as big waves. The fishing activity will be disrupted due to deteriorating weather factors, which means that the smoothness of the marketing and consumption of fish is also disrupted.

4. Conclusions

Based on the results of the study, it was concluded that the analysis of the fishing business income when using dogol (Demersal Danish Seine) fishing tools in Brondong Village found that the average total cost

incurred by fishermen (boat owners) for one trip was namely Rp 41,110,400 with an average profit of Rp 80,280; 500 per trip. The average R / C value was 2.85, which means that the fishing business using the dogol fishing gear in Brondong Village is viable to run.

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