EXPLORATION OF TRADITIONAL FISHERMEN'S INCOME IN KRUEN MANE, NORTH ACEH REGENCY

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Abstract

Fishermen's income is an accumulation of the results of fishermen's efforts that do not stand alone, but are influenced by various factors. Therefore, fishermen's income such as capital, season, climate, fishing gear productivity, fishing areas, fish prices and the amount of fish caught.Fishermen's income factors include factors such as seasonal fluctuations, limited capital and human resources, access to exploitative fish trade networks, and the negative effects of fisheries modernization and the blue revolution, both of which have led to excessive depletion of marine resources. This process is still ongoing today, and fishermen are experiencing further impacts from declining income levels and difficulties in obtaining their catches. The purpose of this study is to determinemetThe revenue analysis method that calculates fixed costs and variable costs to revenue. Furthermore, a production function analysis is carried out, where the production function describes the relationship between input and output. Based on this, the results of this studyexpected to be a consideration for the government in formulating policies related to the welfare of traditional fishermen with all their limitations. This type of research is quantitative descriptive with a research population of traditional fishermen in Krueng Mane, North Aceh. The type of data in this study uses primary data in the form of a questionnaire with a Likert scale where the selection of research samples uses random sampling which will then be subjected to regression using the SPSS application.

Keywords: Traditional Fishermen, Income Theory.

INTRODUCTION

The low income of traditional fishermen is a long-standing problem, but this problem has not been resolved until now, because it is too complex. This is not only related to socio-economics, but also to the environment and technology. Some obstacles in efforts to increase the income of traditional fishermen are biological, technological and socio-economic factors. Biological obstacles are related to limited fish resource stocks due to marine environmental pollution, and over-catch.

ToTechnological constraints relate to fishing gear, engines, motors or other supporting infrastructure such as vessel length, size and facilities, or processing equipment that can improve fish quality.Most traditional fishermen in Krueng Mane, North Aceh Regency, go to sea using a 15-foot boat (approximately 4.5 meters) to operate fishing and the engine used is Power knot (PK), so a 15-foot boat uses a 5 power knot (PK) engine. People who have a livelihood and income as fishermen are one of the groups of people who carry out business activities by earning income from the fishing activities themselves. Fishermen are people who actively work in fishing operations. The level of welfare of fishermen is largely determined by their catch.

The amount of catch also reflects the amount of income received and the income is mostly for family consumption needs. Thus the level of fulfillment of family consumption needs or minimum physical needs is very much determined by the income received.The income of the fishing community is still an unresolved polemic. Fishermen's income is very much determined by the level of catch. When the level of catch is high, then fishermen can get a bigger income. Likewise, when the level of catch is low, or maybe nonexistent, then the income received by fishermen is very small. This is in line with what Ruswanty (2019) said.Fishermen do their work with the aim of earning income for their living needs. The fishing community is one of the poor groups with low economic conditions. The low level of fishermen's welfare is a challenge in achieving the goals of fisheries development, including improving fishermen's welfare. Based on this description, I am interested in conducting research related to the socio-economics that affect the catch of traditional fishermen. This

study aims to observe and analyze the factors that affect the catch of fishermen in Krueng Mane, North Aceh Regency.

LITERATURE REVIEW

Traditional Fishermen

Fishing communities, in this case traditional fishermen, are fishermen who utilize fishery resources with traditional fishing gear, small business capital, relatively simple fishing organizations and operate to meet daily needs. The allocation of the catch that is sold is mostly used to meet daily basic needs, especially food, and is not invested in developing the business scale (Trisnawati, 2017). Fishermen are people who actively carry out fishing activities, either directly (such as casters and net users), or indirectly (such as sailboat helmsmen, motorized fishing boat captains, ship mechanics, fishing boat cooks), as a livelihood (Encyclopedia of Indonesia, 2020).

Income Theory

Pendapatan is the difference between revenue (TR) and all costs (TC). So Pd = TR – TC. Fishermen's revenue (TR) is the multiplication of the production obtained (Y) by the selling price (Py). Fishermen's costs are usually classified into two, namely fixed costs and variable costs. Fixed costs (FC) are costs that are relatively fixed in amount and continue to be incurred even though the production obtained is large or small. Variable costs (VC) are costs whose size is influenced by the production obtained, for example labor costs. Total costs (TC) are the sum of fixed costs (FC) and variables (VC), so TC = FC + VC (Soekartawi, 2002).

Machine

A machine is a tool driven by power or force that helps humans work on certain products or parts of products. Human capabilities predate written records. The main differences between mechanisms and simple tools are the source of power and the possibility of operating independently. The term "machine" usually refers to components that work together to perform a specific task. These tools can usually change the intensity of force, change the direction of force, or change the form of motion or energy into a different form (Sofyan, 2004).

Experience

Work experience is the amount of time a person spends completing certain tasks according to their abilities. Anhar (2017) stated that work experience can be defined as the time a person spends acquiring knowledge, skills, and attitudes that are appropriate to the type and frequency of work they complete. Work experience, as stated by Manulang in Sulaeman (2014), is a process in which employees acquire knowledge and skills about work methods due to their involvement in carrying out their tasks.

Capital

Capital consists of total short-term permanent debt, long-term debt, preferred stock, and common stock. The policy that determines how much of a company's funding needs are financed by debt is called capital structure (Fuadilla, 2022). Capital structure theory discusses how capital is allocated for the company's real investment purposes. The capital structure consists of a combination or mixturefrom various long-term funding sources, such as bonds, long-term debt, share capital, and other long-term debt.

Fuel oil

Fuel oil (BBM) is a type of fuel (fuel) produced from refining crude oil from the earth's interior. Crude oil refining begins with processing crude oil to produce oil products, including BBM. Crude oil processing also produces various other products, such as gas, naphtha, and light sulfur wax residue. Unless new reserves are found or renewable energy is used, the use of BBM will continue to

increase in line with Indonesia's national economic growth Daryanto (2007) and will decrease over time in accordance with Indonesia's national reserves and stocks.

Figure 1 State Of The Art

IMPLEMENTATION METHODS

Types and Design of Research

The research method used is the case study method, namely research conducted by observing directly in the field. Case study is a method that explains the type of research on a particular object during a period of time or a phenomenon that is determined in a place that is not the same as other areas. This study examines the influence of machines, experience, capital, fuel oil and nets have a significant effect on the income of traditional fishermen in Krueng Mane, North Aceh Regency.

Population and Sample

In this study, the population used was the fishermen of Krueng Mane, North Aceh Regency, totaling 40 people. The sampling method used was*Random Sampling*.

Data Types and Sources

The data collected in this study consists of primary data and secondary data. Primary data is data obtained from interviews and data collection results directly to respondents using questionnaires as well as observations and discussions in the field. Secondary data is data obtained from related agencies and related references.

Method of collecting data

The data collection techniques in this study are interview and questionnaire techniques, namely data obtained directly from the field.

RESULT AND DISCUSSION

Validity Test

Validity indicates the level of capability of the research instrument in measuring the variables studied accurately. A variable is said to be valid if the variable score correlates significantly with its total score, in this case the correlation technique used*Pearson Product Moment*with the decision of the test results if rcount> rtable then Ho is rejected or the variable is declared valid. The results of the validity test on the instrument can be seen in Table 1 below:

Variables	Item	Correlation Value	rtable	Information
Income (PD)	PD.1	,664	0.261	Valid
	PD.2	,603		Valid
	PD.3	,513		Valid
	PD.4	,664		Valid
Machine (MS)	MS.1	,508	0.261	Valid
	MS.2	,605		Valid
	MS.3	,463		Valid
Experience (PL)	PL.1	,349	0.261	Valid
	PL.2	,313		Valid
	PL.3	,306		Valid
Capital (MD)	MD.1	,395	0.261	Valid
	MD.2	,352		Valid
	MD.3	,368		Valid
	MD.4	,328		Valid
Fuel oil (BBM)	BBM.1	,395	0.261	Valid
	BBM.2	,352		Valid
	BBM.3	,368		Valid

Source: Primary Data, (processed) 2024.

The results of the validity test in Table 5.5 above show that all valid questions where the correlation value is greater than the table correlation value, then all of these questions are used in the questionnaire.

4.3.2 Reliability Test

Reliability testing is carried out for valid items. Reliability testing in this study uses the method*Cronbach's Alpha,*and the instrument is declared reliable if the Cronbach Alpha value reaches at least 0.6 Nurgiyantoro, (2000:312). The results of the reliability test are shown in Table 2 as follows:

Variables	Number of Indicators	*Cronbach's Alpha*	Information
Income (PD)	4	,779	Reliable
Machine (MS)	4	,630	Reliable
Experience (PL)	3	,663	Reliable
Capital (MD)	4	,659	Reliable
Fuel Oil (BBM)	3	,651	Reliable

Source: Primary Data, (processed) 2024.

Based on the table above, it can be seen that the reliability of the items in each variable has a value close to 0.6 so that the questions used are declared reliable.

Normality Test

The normality test aims to test whether in the regression model, the dependent variable and the independent variable both have a normal distribution or not. To see whether the research data is normal or not, we can see the histogram graph, normal probability plot graph and the following Kolmogrov-Smirnov (KS) non-parametric statistical test:

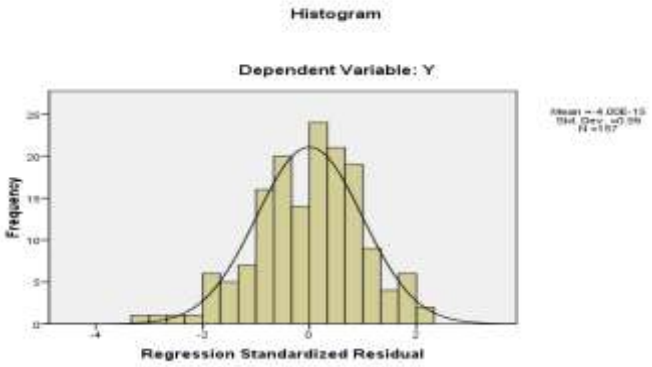

Figure 2 Histogram Graph

Source: Research Results, 2024 (processed data)

By looking at the appearance of the histogram graph which does not skew to the left or right and is symmetrical, this shows that the data is normally distributed.Testing the normality of data by looking at the normal Probability Plot graph is more reliable than the histogram graph. This method compares the cumulative distribution of the normal distribution.

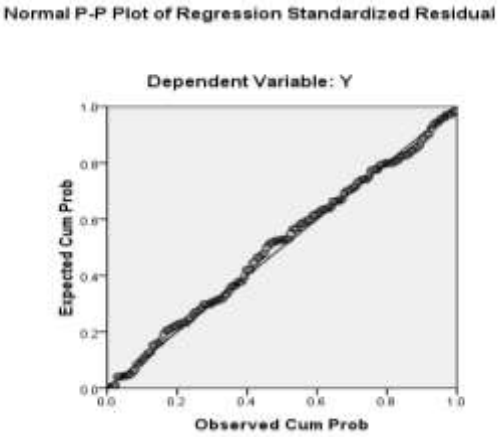

Figure 3 Probability Plot Normality Graph

Source: Research Results, 2024 (processed data).

Based on the image above, it can be concluded that the regression model meets the normality assumption because the data is spread around the diagonal line and the data distribution is in the same direction following the diagonal line.

Multicollinearity Test

Multicollinearity test is used to determine whether there is a perfect linear relationship between independent variables, the regression model assumes that there is no perfect linear relationship between independent variables. Detection of multicollinearity by looking at the value*Variance Inflation Factor (VIF)*from the results of the regression analysis, if the VIF value > 5 then there is a high degree of multicollinearity, Sumodiningrat (1999:286). The results of the multicollinearity test can be presented in Table 3 below:

Multicollinearity Test Results

Variables	Collinearity Statistics		Information
	Tolerance	VIF	
MS	,575	1,738	There is no multicollinearity
PL	,602	1,660	There is no multicollinearity
MD	,942	1,062	There is no multicollinearity
fuel	,774	1,521	There is no multicollinearity

Source: Primary Data (processed) 2024.

The results of the multicollinearity test in the table above show that each independent variable has a VIF value <5, this shows that there is no perfect relationship between the independent variables, from these results it can be concluded that there are no symptoms of multicollinearity in the regression model.

Heteroscedasticity Test

The heteroscedasticity test aims to test whether the model regression occurs inequality of variance from residual one observation to another observation (Ghozali, 2011). If the variance of residual one observation to another observation remains, then it is called homoscedasticity and vice versa is called heteroscedasticity. Most data containing heteroscedasticity is cross-section data, because this data collects data that represents various sizes. In this study the method used to test heteroscedasticity is the glejser test. The glejser test method regresses the absolute value of the residual with the independent variable, Ghozali (2011). A good regression model is a regression model that does not experience heteroscedasticity.

a. If the significance value > 0.05 then homoscedasticity occurs
b. If the significance value < 0.05 then heteroscedasticity occurs.

Table 4 TestHeteroscedasticity

Coefficientsa

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.189	.228		.830	.408
	MS	-.002	.026	-.006	-.074	.941
	PL	.013	.038	.028	.346	.730
	MD	.041	.039	.087	1,041	.299
	fuel	.027	.041	.055	.072	.331

a. Dependent Variable: PD

The output results show that none of the variables have a significance below 0.05. Therefore, it is stated that each variable does not experience heteroscedasticity problems.

Discussion

Regression Analysis ResultsPartial Hypothesis Test Results (t-Test)

Regression analysis is used to see the influence between machines, experience, capital and fuel on the income of traditional fishermen in Krueng Mane, North Aceh, which is presented in the following table:

Table 5 Multiple Linear Regression Analysis

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	6,574	1,288		5,105	,000
	MS	,196	,089	,187	2,197	,030
	PL	,410	,090	,399	4,573	,000
	MD	,197	,094	,143	2,103	,037
	fuel	,173	,089	,211	-1,712	,109

a. Dependent Variable: PD

Source: Processed SPSS data, 2024.

Based on the analysis results as presented in Table5 above, then the multiple regression equation can be arranged as follows:

Y = 6.574+ 0.196 MS + 0.410 ML + 0.197 MD + 0.211 BBM

From the regression model, it can be explained as follows:

Based on the results of the analysis above, it is known that of the three variables studied, all have a positive contribution to the income of traditional fishermen in Krueng Mane, North Aceh, only the BBM variable has no effect.

Simultaneous Hypothesis Test Results (F Test)

The statistical F test is used to prove the hypothesis that there is an influence between the independent variables, namely Machine (MS), Experience (PL), Capital (MD) and Fuel Oil (BBM) on the dependent variable, namely income (PD).

Table 6 Simultaneous Tests

ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	101,859	3	33,953	25,628	.000a
	Residual	201,372	152	1,325		
	Total	303,231	155			

a. Predictors: (Constant), MS, PL, MD, BBM

b. Dependent Variable: PD

Based on the results of the F test in Table6 obtained that F count = 25.628 with p value = 0.000 < 0.05, while F table = 2.43 so that F count > F table then it can be concluded that the hypothesis H1, H2, H3 and H4 are accepted, which means that there is a simultaneous influence between Machine (MS), Experience (PL), Capital (MD) and Fuel Oil (BBM) on the dependent variable, namely income (PD) which is positive and significant so that the proposed hypothesis is accepted.

Discussion

The Impact of Machines on Income

Based on the results of partial multiple regression analysis of the influence of machines (MS) on income (PD) using the SPSS program, the t count was 2,197, while the value at the real level α = 0.05 value, the t table was obtained = 1,654, meaning t count > t table with a probability of 0.005 because the probability value of 0.030 <0.05, it can be concluded that machines have a positive and significant effect on the income of traditional fishermen in Krueng Mane, North Aceh.

This is due to the adjustment of engine usage to fishing boats. Generally, boats using 5 HP engines are capable of pushing boats that are categorized as boats, so larger engines are not needed because they only increase fishermen's production costs, which means that if the use of output is adjusted appropriately, it will minimize production output and maximize income. In accordance with the theoretical basis used, namely the profit function*Cobb Douglas*derived from the Cobb-Douglass production function is a function that involves the prices of production factors that have been normalized by the output price.

The Effect of Experience on Income

Based on the results of partial regression analysis of the influence of Experience (PL) on income (PD) using the SPSS program, the calculated t = 4.573 was obtained, while the value at the

real level α = 0.05 value, the obtained t table = 1.654 means that the calculated t> t table with a probability of 0.000> 0.05, which means that experience has a positive and significant effect on the income of traditional fishermen in Krueng Mane, North Aceh. Fishermen's experience affects the income of traditional fishermen because it can be seen from the distribution of respondents, where the largest experience at sea is in the interval above 31 years, namely 18 fishermen. In addition, fishermen who have more experience at sea tend to still have a productive age so that the distance they travel to sea is still affordable.

The Effect of Capital on Income

Based on the results of partial regression analysis of the influence of capital (MD) on income (PD) using the SPSS program, the calculated t = 2.103 was obtained, while the value at the real level α = 0.05 value, the obtained t table = 1.654 means that t count > t table with a probability of 0.037 > 0.05 so that capital has a positive and significant effect on the income of traditional fishermen in Krueng Mane, North Aceh. This is very much in line with what happened to the fishermen in Krueng Mane, North Aceh, because basically with the addition of working capital it will affect the operational costs incurred in production activities and with the increasing amount of capital so that the funds used to purchase input will increase so that the distance to be traveled to catch fish will be wider and the possibility of getting fish during the fishing process will be greater so that income will also increase.

The Impact of Fuel on Income

Based on the results of partial regression analysis of the influence of fuel oil (BBM) on income (PD) using the SPSS program, the calculated t value was obtained =-1,712while the value at the real level α = 0.05 value, obtained ttable = 1.654 means tcount < ttable with a probability of 0.109 < 0.05 so that fuel does not affect the income of traditional fishermen in Krueng Mane, North Aceh. In general, the more fuel used, the further the distance that can be traveled by fishermen, which means that if fishermen can travel long distances and move to locations where there are many fish, then the fishermen's catch will increase. However, with the knowledge of fishermen, they have chosen the point, location or place where they catch fish, besides the location or distance has also been adjusted to the capacity of the engine's reach so that fuel is not a major obstacle in going to sea as long as supplies are unlimited.

Conclusion

With the results of this study, the author concludes from several fishermen's opinions thatfrom the results of fishermen's efforts that do not stand alone, but are influenced by various factors. Therefore, fishermen's income such as capital, season, climate, fishing gear productivity, fishing areas, fish prices and the amount of fish caught.Fishermen's income factors include factors such as seasonal fluctuations, limited capital and human resources, access to exploitative fish trade networks, and the negative effects of fisheries modernization and the blue revolution, both of which have led to excessive depletion of marine resources. This process is still ongoing today, and fishermen are experiencing further impacts from declining income levels and difficulties in obtaining their catches. The purpose of this study is to determinemetode revenue analysis that calculates fixed costs and variable costs to revenue. Next, a production function analysis is carried out, where the production function describes the relationship between input and output. Based on the results of the data analysis which show that there are differences in the influence of each research variable, for the variablesThe engine has a positive and significant effect on the income of traditional fishermen in Krueng Mane, North Aceh. Experience has a positive and significant effect on the income of traditional fishermen in Krueng Mane, North Aceh. Capital has a positive and significant effect on the income of traditional fishermen in Krueng Mane, North Aceh. Fuel does not affect the income of traditional fishermen in Krueng Mane, North Aceh.

Suggestion

Based on the research results and conclusions that can be drawn, the suggestions that can be given in this research are as follows:

1. Fishermen can gain experience using more sophisticated technology or equipment, in order to increase fishermen's income.
2. Fishermen can add capital to build bigger boats, boats that are too old will rot and not be strong enough to withstand storms or when the weather is bad and the boat cannot go far out to sea.

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