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INFLUENCE OF FISHERMEN'S EXCHANGE RATE ON THE WELFARE OF THE FISHING COMMUNITY IN THE COASTAL AREA OF BONE BOLANGO REGENCY

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Abstract

The purpose of this study is to find out the Welfare of the Fishing Community on the Coast of Bone Bolango Regency, and the target of this study is to study, especially, the Welfare of the Fishing Community using the indicators of Total Fishermen's Income and Total Fishermen's Expenditure. The method used in this study is the Quantitative Descriptive Method, and for data collection, using Primary Data through interviews, questionnaires, and observations. For the population, the number of fishermen in the Coast of Bone Bolango Regency is 1,307 fishermen, and the sample taken is 44 people, for the sampling technique, namely using the Slovin formula. This study uses the Multiple Linear Regression Analysis method. The results of this study show that the total income of fishermen has a positive effect on the welfare of the fishing community because this is because the income from the fisheries sector is the main livelihood of villagers located on the coast of Bone Bolango Regency and is one of the efforts to meet all the needs of their families. As for the total expenditure of fishermen, it has a negative effect, which can be seen from the value of the total expenditure coefficient, giving a negative and significant sign for the welfare of fishermen. Why is that, if the income received is greater than the expenses, it will result in a lack of funds to go to sea or even meet daily needs?

Keywords: welfare, total fishermen's income, total fishermen's expenses.

1. Introduction

The great marine and fisheries potential that Indonesia has means that its people who work as fishermen live by managing fisheries and marine resources. As a community living in coastal areas, fishing communities have their own social characteristics that are different from people living in inland areas. In some coastal areas that are developing rapidly, even so, the problem of poverty still plagues some coastal communities, so this social fact seems ironic in the midst of the abundance of coastal and marine resources. In their socio-economic life, fishermen are often grouped into two large groups, rich fishermen and poor fishermen.

The lack of welfare of small fishermen is caused by several factors such as working capital, technology used, working hours, and so on (Dahuri, 2009). The high and low income of fishermen greatly affects the level of welfare of fishermen. This depends on several conditions, such as weather, fishing gear, and especially fishermen who catch fish based on the season. This leads to a

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decrease in fishermen's income, causing household needs to be unmet. A more accurate indicator is the fishermen's exchange rate (NTN), which takes into account all the income and expenses of fishermen's families. The fishermen's exchange rate is expected to be an indicator of welfare because this exchange rate measures the level of household purchasing power. An increase in the exchange rate means an increase in purchasing power and an increase in the welfare of fishermen's households (Ministry of National Development Planning, 2014).

Table 1. Total Fishermen's Income and Total Fishermen's Expenditure

NO.	Description		
1.	Total Fishermen's Income/Month		Number of respondents
	Catch	IDR 1,500,000,	15 Respondents
2.	Total Fishermen's Expenditure/Month		
	Capture Fisheries Business	IDR 1,050,000,	
	Family Consumption	IDR 1,000,000	

Source: Primary Data, 2022 (preliminary observations)

From table 1 above is an explanation of the data taken from 1 sub-district on the Bone Bolango Coast, namely Kabila Bone District with 15 respondents. The data can be concluded that the total income of fishermen in a month is an average of Rp 1,500,000 and for the total monthly expenditure of fishermen an average of Rp 2,050,000.

Table 2. Area Area, Population, and Population Density by Coastal District, Bone Bolango Regency, 2019

District	Area	Inhabitant	Population Density
Bone Beach	104,37	11.123	106,57
Kabila Bone	67,85	11.598	170,93
Tulang Raya	65,30	7.154	109,55
Bone	152,02	9.986	65,68
Bulawa	87,82	5.615	63,93
Entire	477,19	45.476	516,66

Source: BPS Bone Bolango, 2019

Table 2 above provides an explanation of data regarding the area, population, and population density in the coastal area of Bone Bolango Regency, which consists of 5 sub-districts, namely, Bone Pantai, Kabila Bone, Bone Raya, Bone, and Bulawa. So, of the 5 sub-districts that have an area of 477.19 km2, the population is 45,576 people, and the population density is 516.66 people/km2

An accurate picture of changes in fishermen's welfare requires an instrument that is easy to use and can fully describe the welfare of fishermen. Saptanto and Apriliani (2012), in Imam Triarso (2021), used the Fishermen Exchange Rate (NTN) approach as the main performance indicator of the Ministry of Maritime Affairs and Fisheries (KKP) to measure the level of welfare of a fishing community. A more appropriate indicator is the fishermen's exchange rate (NTN), which considers all revenues and all expenditures *of* fishermen's families. The fishermen's exchange rate is expected

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to be an indicator of welfare because this exchange rate measures the level of household purchasing power. An increase in the exchange rate means an increase in purchasing power and an increase in the welfare of fisher households (Ministry of National Development Planning, 2014). The Fishermen Exchange Rate (NTN) can describe the exchange power of a cultivation business to the needs of production factors and the need for consumption of goods and services so that the change in NTN is influenced by changes in the number and/or price of production factors and household consumption (Riani, 2017) in (Utama, 2018).

2. Materials and Methods

2.1 Theoretical Studies

2.1.1 Fishing Communities

The fishing community is a professional community that utilizes the results of natural resources contained in marine waters in the form of fish, seaweed, shrimp, and other marine resources. The fishing community is one of the parts of society that lives by managing the potential of fishery resources. As a community living on the coast, the fishing community has its own social characteristics that are different from those living on the mainland. In some relatively rapidly developing coastal areas, the community structure is heterogeneous, has a high work ethic, strong social solidarity, is open to change, and has the characteristics of deep social interaction. Even so, the problem of poverty has plagued some coastal communities, so this social fact seems ironic in the midst of them having abundant coastal and ocean resources (Fargomeli, 2011), in Utama (2018).

As we know, fishermen are seen as nothing more than a working group whose place of work is in the waters of rivers or oceans, because they are seen as workers, so their activities are only a reflection of the work itself and apart from the philosophy of fishermen's life, that their source of livelihood is located and located in the ocean. According to (Raharjo, 2002) in (Main, 2018) Source

Life in the sea has the meaning that humans who will take advantage of the resources available in the sea are not in conflict with the laws of the marine nature that have been formed and patterned as they see and feel, the action that must be done and needs to be carried out is to learn through vision, experience of oneself or others in order to make adjustments to the means of livelihood so that the source of livelihood can be useful and effective for the next life.

According to Imron (2003, in Ikhsan Fuandy (2016), Fishermen are a group of people whose lives depend on marine products, either by catching or cultivating them. They generally live on the beach, a residential neighborhood close to the location of their activities.

2.1.2 Welfare

Welfare is a state of fulfilling the needs of a decent life for the community, so that they are able to develop themselves and be able to carry out their social functions that can be carried out by the government, local governments and the community in the form of social services which include social rehabilitation, social security, social empowerment, and social protection (Law No. 11 of 2009 articles 1 and 2).

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According to the World Bank (World Bank, 2000), "poverty is pronounced deprivation in well-being", where welfare can be measured from the wealth a person has, health, nutrition, education, assets, housing, and certain rights in society such as freedom of speech. In other words, the scope of welfare substance is often linked to the scope of social policy. As an aggregate attribute, welfare is a complex representation of a scope of welfare substance. Welfare is complex because it is multi-dimensional, has inter-dimensional relationships, and has dimensions that are difficult to represent. Welfare is not enough to be expressed as a single intensity that represents the state of society, but it also requires a distributive representation of that state.

According to Sunarti (2012) in (Iskandar, 2022), Welfare is a system of life and social, material, and spiritual livelihood that is covered by a sense of safety, morality, and inner peace that allows every citizen to make efforts to meet the best physical, spiritual, and social needs for themselves, their households, and society. Welfare is a social system of life and livelihood. Material and spiritual followed by a sense of safety, morality, and self-peace, household and society born and mental that allows every citizen to make efforts to fulfill the best physical, spiritual, and social needs for themselves, their households, and society by upholding human rights (Liony, et al., 2013).

2.1.3 Fisherman Exchange Rate

The Fishermen Exchange Rate (NTN) is a measurement tool used to determine the ability to exchange caught fish for goods/services needed for production and household consumption. Definitely, the Fishermen's Exchange Rate (NTN) is the ratio between the price index received by fishermen (It) and the price index paid by fishermen (Ib), expressed in the form of a percentage. This NTN is obtained by considering the entire value of *revenue* to all *expenditures* of fishing families (Supria, 2020) in Lawendatu (2022).

According to Basuki (2001) in Lawendatu (2022), NTN is the ratio of total income to total expenditure of fishermen's households over a certain period of time. In this case, the income in question is gross income or can be called the income of fishermen's households. Basically, the Fishermen's Exchange Rate is an indicator to measure the level of welfare of the fishing community.

According to Wikipedia, the Fishermen Exchange Rate (NTN) is the ratio between the price index received by fishermen and the price index paid by fishermen, expressed in statistical percentages. In general, NTN produces 3 meanings:

1) NTN>100 means that NTN in a certain period is better than NTN in the base year; in other words, fishermen experience a surplus.
2) Production prices rose more than the increase in consumption prices. Fishermen's income rises and becomes greater than their expenses.
3) NTN=100 means that NTN in a certain period is equal to NTN in the base year; in other words, fishermen break even. The increase/decrease in the price of production/is equal to the percentage increase/decrease in the price of consumer goods. The income of fishermen is the same as their expenses.

2.1.4 Fisherman's Household Income

Fishermen's income is the income generated by all family members who carry out fishing activities or other activities. The source of fishermen's income is divided into two, namely, income from fishing and income outside of fishing. The income of fishermen's households is highly dependent on the potential of fishery resources found in the ocean. The income of the fishing community will directly or indirectly affect their quality of life, because income from fishing products is the main source, and even the only one for them. According to Maryatmo and Susilo (1996) in Hasyim (2017) stated that income is the total amount of money received by a family or person for a certain period of time, usually one year.

According to Rahim (2011) in (ABDINA, 2022), the factors that affect fishermen's income from fishing activities are physical factors in the form of coastal environmental conditions, fishing technology, fishing locations, and capital, as well as non-physical factors related to climatic conditions (seasons), fishermen's age, fishermen's education, and experience at sea.

The income earned by the fishing community can be a benchmark for the welfare of the family, be it children or fishermen's wives. If the activities carried out by fishermen generate a high level of income, it will obviously affect the welfare of the fishermen's families themselves, both in terms of consumption and in terms of the feasibility of their lives. It should be noted that income streams have the following characteristics:

1) The corporate sector uses the factors of production owned by households. These production factors obtain income in the form of salaries and wages, rent, interest, and profit;
2) Most of the income received by households will be used for consumption, namely buying goods and services produced by the corporate sector;
3) The rest of the household income that is not used for consumption will be saved for the future or to be saved in financial institutions.
4) Entrepreneurs who want to make investments will borrow household savings (Sukirno, 2011).

2.1.5 Fisherman's Household Expenses

The structure of fishermen's household expenditures is determined by the level of household income. The average per capita expenditure per month is the average cost that a family spends during a month for the consumption of all family members. Family expenditure for food and non-food is then converted into an average monthly expenditure (BPS 1998).

According to Dumairy (2004), in (ABDINA, 2022), consumption is spending on goods and services. Spending on food, clothing, and other necessities is classified as spending or consumption. Goods that are produced to be used to meet needs are called consumer goods. Household consumption patterns as the proportion of household expenditure allocated for food and non-food needs. Household consumption patterns are one of the indicators of household/family welfare.

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2.2. Method

2.2.1 Research approach and design

This study uses a quantitative descriptive approach, because in this study, data was collected to find out how much influence variable X has on variable Y. Variable X to be studied is the total income of fishermen (X1), and the total expenditure of fishermen (X2) on variable Y, namely welfare.

2.2.2 Types and sources of research

The type of data used in the research is primary data, which is data obtained from the results of the first source at the research location by conducting interviews and questionnaires.

2.2.3 Data Collection Techniques

Interview is a conversation between the Resource Person and the Interviewer, the purpose of conducting this interview is to obtain reliable information from the Resource Person, Questionnaire is a technique for collecting information by giving questions in writing, Observation is an activity that goes directly to the field to conduct research so that the researcher can make observations on the object being researched directly.

2.2.4 Population and Sample

The population is the object that is used in the research as a whole, namely, Fishing Fishermen in Bone Bolango Regency, with a total of 1,305 Fishing Communities. The sample is a small part taken from the population to represent the population to be studied. To find out the number of samples taken, it can be determined using the Slovin formula as follows.

$$n = \frac{n}{1+Ne^2} \quad (1)$$

Where:

n = number of samples
N = number of Population
Ee = error tolerance limit.

So it is known that N is 1,305 people of the fishing population with a specified tolerance limit of 15%, then the minimum number of samples taken is as follows:

$$n = \frac{1.305}{1+1.305(0{,}0225)^2} \quad (2)$$

$$= 44 \text{ samples}$$

So the number of samples taken was 44 fishermen respondents on the coast of Bone Bolango Regency.

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2.2.5 Data Analysis Techniques

Multiple Linear Regression Analysis

So to determine the relationship between fishermen's income and fishermen's expenditure on the level of welfare in the Coast of Bone Bolano district by using multiple linear regression analysis with the following formula:

$$\mathbf{Y = \alpha+\beta1X1+\beta2X2+\mu}$$

Y = Well-being
α = Constant
β = Regression Coefficient
X1 = Fisherman's Household Income
X2 = Fisherman's Household Expenses
μ = Error

Normality Test

The normality test aims to find out whether the data used has been distributed normally. The normality test can be carried out with the Kolmogorov-Smirnov test, by looking at the significance value (Firdaus, 2011). Sig. KS > 0.05 = Normally distributed data Sig. KS ≤ 0.05 = Normally distributed data. The Kolmogorov-Smirnov test is used to test the potential value of a sample over a certain distribution.

Heteroscedasticity

The heteroscedasticity test aims to see if there is an inequality of variance in the regression model from the residual of one observation to another observation in the regression model. If the variance of one residual observation of another observation is fixed, then it is called homoskedasticity or heteroskedasticity does not occur. A good regression model is one that is homoscedastic, or where no heteroscedasticity occurs (Supriana, 2013).

Multicollinearity Test

Multicollinearity is the existence of a perfect or definite linear relationship (correlation) between some or all of the variables that explain the regression model. The data used is the use of logarithmic factors. A good regression model should not have a correlation between independent variables. The existence or absence of multicollinearity in the regression model can be seen from tolerance and VIF (*Variance Inflation Factor*) (Supriana, 2013).

Test of Goodness of Fit

1. **Determination Coefficient Test (R^2)**

   The determination coefficient refers to the ability of the independent variable (X) to explain the dependent variable (Y). The determination coefficient is used to calculate how much variance and dependent variables can be explained by the variation of independent variables.

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The maximum R^2 value is 1, and the smallest is 0 ($0 < R^2 < 1$). If R^2 is equal to 0, then the regression line has no influence on the dependent variable variant of 0.

2. t-Test (Partial Variable Effect Test)

The t-test is a partial test of the influence of independent variables on dependent variables used to find out whether or not the independent variable has a real effect on the dependent variable. The level of significance (α) used in social sciences is 5% (Firdaus, 2011).

3. Results And Discussion

3.1 Analysis of the Influence of Fishermen's Exchange Rate on Fishermen's Welfare in the Coastal Area of Bone Bolango Regency

After conducting a classical assumption test, the results of multiple linear regression analysis will be seen with dependent variables (fishermen's welfare) and independent variables (Total Income and Total Expenditure). The results of the estimate are as follows

Table 3. Estimation Results

Coefficients

Type	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	92.936	9.847		9.438	.000
X1	3.932E-005	.000	.981	17.639	.000
X2	-3.392E-005	.000	-.543	-9.767	.000

a. Dependent Variable: Y

Source: Processed SPSS v.20 (2022)

Table 3 above can be substituted in multiple linear regression equations, including:

$$\mathbf{Y = 92.936 + 3.932(X1) - 3.392(X2) + \varepsilon}$$

The results of the estimates that have been found are interpreted descriptively; this aims to simplify and understand the relationship between each variable, along with the elaboration of the estimation results.

X1 = Total Income, has a positive impact on the welfare of fishermen in the Bone Bolango area. If the total income increases, the welfare will also increase **by 3.93** percent.

X2 = Total Expenditure has a negative impact on the welfare of fishermen in the Bone Bolango area. If the total income increases, the welfare of fishermen will decrease by **-3.39** percent.

3.2 Coefficient of Determination

The determination coefficient is a mathematical technique (matrix) that measures the extent to which a regression model explains the variation of dependent variables.

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Table 4. Determination Coefficients

Model Summary

Type	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.943a	.888	.883	24.81182	2.515

a. Predictors: (Constant), X2, X1
b. Dependent Variable: Y
Source: Processed SPSS v.20 (2022)

If you look at the estimation results, it shows an R-squared value of .888, and if it is percented, it will be worth 88.8%. This means that 88.8 percent of the variables X1 and X2 (Total Income and Total Expenditure) affect Y (Fishermen's Welfare). While the remaining 11.2% was influenced by other variables that were not included in the study.

3.3 Partial Test (T-Statistical Test)

This test aims to test individuals. We will show the results of the estimates that have been obtained in the previous Table 4.2.3.1

Table 5: t-Statistical Test

Variable	B	T	Sig
X1	3.93E-05	17.639	.000
X2	-3.39E-05	-9.767	.000

Source: Processed SPSS v.20 (2022)

Table 5 above can explain the significance of the independent variable to the dependent variable:

Total Income (X1) to Fishermen's Welfare

It is known that the significance value of X1 is smaller than alpha 0.05. This means that Hnull is rejected and Hsatu is accepted, or descriptively has a real influence on the welfare of fishermen.

Total Expenditure (X2) on Fishermen's Welfare

It is known that the significance value of X2 is smaller than alpha 0.05. This means that Hnull is rejected and Hsatu is accepted, or descriptively has a real influence on the welfare of fishermen.

3.4 Data Normality

For this purpose, data normality testing is carried out using the Kolmogorov-Smirnov (KS) test with the following procedure:

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Table 6. Data Normality

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		44
Normal Parameters[a,b]	Mean	0E-7
	Std. Deviation	24.22793222
Most Extreme Differences	Absolute	.166
	Positive	.166
	Negative	-.126
Kolmogorov-Smirnov Z		1.103
Asymp. Sig. (2-tailed)		.175

a. Test distribution is Normal.
b. Calculated from data.

Source: Processed SPSS v.20 (2022)

Table 6 describes that the data has been normally distributed with the value of Asymp.Sig. (2-tailed) of .175, meaning greater than the 5% sig level (0.05). So that it can be continued to the next stage of testing.

3.5 Heteroskedasticity

The purpose of the heteroscedasticity test is to find out whether there is a residual disparity in variance between observations on the regression equation.

Table 7. Heterokedasticity (Park Test)

Coefficientsa

Type	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	3.848	.635		6.060	.000
X1	5.019E-007	.000	.504	3.492	.001
X2	-3.534E-008	.000	-.023	-.158	.875

a. Dependent Variable: LN_RES

Source: Processed SPSS v.20 (2022)

In Table 7 above, it is described that the variable X1 (Total Income) has a symptom of heteroskedasticity, which is because the sig X1 is below the alpha value (α=0.05). Meanwhile, X2 (Total Expenditure) was not affected by heteroskedasticity symptoms, because Sig X2 was above alpha (α) 0.05%.

The X1 (Total Income) variable exhibits heterogeneity because People have more freedom and more opportunities to use their income. When income increases, so does the variance, and the income received by fishermen also varies. Therefore, variance cannot be considered as constant or of equal intensity.

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3.6 Multicollinearity

The multilinear test uses the VIF technique, where we will see how the correlation between each independent variable and other independent variables. When the value

A tolerance of more than 0.10 does not indicate multicollinearity, and a VIF value of less than 10 indicates that there is no multicollinearity. The following is a test of the matrix correlation between independent variables

Table 8 Multicollinearity (VIF)

		Tolerance	VIF
1	(Constant)		
	X1	.881	1.136
	X2	.881	1.136
a. Dependent Variable: Y			

Source: Processed SPSS v.20 (2022)

The description of the results above shows that the VIF value of the two independent variables is less than 10 (VIF < 10), so there is no symptom of multicollinearity between the independent variables in the model.

Results and discussions can display data in the form of tables and figures. Results must be supported by relevant references or be comparable to previous studies.

Discussion

The sea has many benefits for human life, especially for coastal communities. Due to Indonesia's huge marine and fisheries potential, fishermen make a living by catching fish and managing marine resources. However, poverty still plagues some coastal communities, making this social reality ironic amid the abundance of coastal and marine resources.

Where we can see that the average education of fishermen in the Bone Bolango district only ranges to approximately the 2nd grade of junior high school. This means that some fishermen do not follow the compulsory program that has been planned by the government to study for 12 years or equivalent to high school/equivalent. If you look at the average experience of the respondents who have worked as fishermen for 29 years.

Total Income to Fishermen's Welfare

Fishermen's income is highly dependent on the fish they catch. Fishermen's income will have a significant impact directly or indirectly on their quality of life, because fishermen's income is the main source, although there are some fishermen looking for income outside of fishermen (Sembiring, 2018). The total income here is the accumulation of added value from income from going to sea and jobs other than going to sea. No wonder total income has a positive impact on the welfare of fishermen. For example, such as the role of the wife is explained by Mirna, (2016) The factor that contributes to the increase in income is the fisherman's wife, in addition to the husband's income which is not enough for the family's daily needs. The uncertainty of going to sea is also one of the factors when there are strong winds in the ocean so that not many fish are caught. This can of course be the main obstacle for the household economy.

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When viewed from the results of multiple regression estimates, in this case, the Total Income variable (X1) has a positive and significant effect on the welfare of Bone Bolango fishermen. This is because income from the fisheries sector is the main livelihood of villagers located on the coast of Bone Bolango Regency and is one of the efforts to meet all the needs of their families. Therefore, the welfare of village fishermen located on the coast of Bone Bolango Regency is greatly influenced by the income of fishermen. This finding is also in line with research conducted by Sembiring (2018), which states that total income has a positive impact on the welfare of fishermen. Because income is a real measure in meeting the needs of the people.

Total Expenditure on Fishermen's Welfare

Knowing household expenses is one way to find out the standard of living of the community. A variety of personal characteristics and related circumstances can affect the way we spend money. In terms of fishermen, the total expenditure of fishermen

The expenditure in Bone Bolango Regency consists of the number of family dependents, the cost of going to sea, debt payments, non-food consumption, and food is a component of expenditure in general.

Therefore, production has a negative influence on the well-being of fishermen. This can be seen from the value of the total expenditure coefficient, which gives a negative and significant sign to the welfare of fishermen. Why is that, if the income received is less than the expenses, it will result in a lack of funding to go to sea or even meet daily needs? Furthermore, if daily needs are not met, it means that welfare cannot be met.

This finding is in line with research conducted by Setiawinata et al., (2019) explained that expenditures that are not related to welfare, such as cigarettes, recreation, entertainment, and clothing, have a negative influence on the welfare of fishermen. However, if the expenditure is intended subjectively, it will have a positive impact. This is as explained by Widyaningsih & Muflikhati, (2015) explained that welfare will increase if expenditure is allocated to subjective activities to encourage more income (for example, communication costs, fishing equipment, vehicles, etc.).

4. Conclusion

The Total Income of fishermen has a positive and significant effect on the welfare of the fishing community because the main source of fishermen's income is from the catch used to meet household needs.

Total fishermen's expenditure has a negative and significant effect on welfare because the result of the total expenditure coefficient gives a negative sign, this is a lot of expenditure compared to the income earned. So that it causes a lack of funding to meet daily needs, and also fishery business activities.

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