

# Original Research Article

## The factors affecting the fishermen's income: A case study of Cikidang Fish Landing Port of Indonesia'

### ABSTRACT

*This Research aims to analyze the factors that affect the income of fishermen at the Cikidang Fish Landing Port, Babakan Village, Pangandaran District, Pangandaran Regency, West Java Province. This research was conducted from May to September 2021 by using the accidental sampling research method. The respondents in this research were fishermen at the Cikidang fish landing port as many as 77 fishermen. The data collected are primary data and secondary data. Analysis of the data in this study multiple linear regression. The results showed that all variables, namely, X1 (Experience), X2 (Length of Time at sea), X3 (Age), X4 (Education), and X5 (Type of Fishing Equipment) together had a significant influence on Y (fisherman's income)/trip with a percentage of effect of 64.5% . While the remaining 32.5% is influenced by other factors not observed in this study. The factors that significantly influence the income of fishermen at PPI Cikidang, Babakan Village, Pangandaran District, Pangandaran Regency are X2 (Long Time at sea) and X3 (Age) of fishermen, and X5 (Type of Fishing Equipment) with a significant p-value (sig) <0.05 (alpha 5%).*

*Keywords: Revenue, Fishermen, Fish landing port*

### 1. INTRODUCTION

Indonesia is a country that has abundant fishery resources potential, both from capture fisheries and fisheries cultivation. Pangandaran Regency is one of the regencies in West Java which has great potential in the field of fisheries which includes capture fisheries, conservation activities, tourism activities, and also fisheries development activities. These three potentials have been recorded as making a major contribution to the regional economy and the people in the region [1].

Fisheries activities in Pangandaran Regency can be seen in the Cikidang Fish Landing Port area in Babakan Village, Pangandaran District [2]. Cikidang Fish Landing Port Is a government facility and fishery business system and in it there are facilities that can be used by fishermen to support fishery The number of fishermen who carry out fishing operations and anchor at Cikidang fish landing port, makes Cikidang fish landing port the center of capture fisheries activities in Pangandaran District. Capture fishing activities business is different from other types of business, fishing activities as fishermen are activities that are full of uncertainty and fluctuate, so fishermen's income depends on natural conditions such as changing seasons which can cause fishermen's income to be erratic and unpredictable. The

impact is that the amount of fishermen's income earned by fishermen cannot meet the needs of fishermen. This is one of the problems faced by fishermen in the Pangandaran Regency.

Fishermen's income is one of the things that affect the welfare of fishermen, there are several factors that are known to affect income [3]. Several factors affect fishermen's income, namely age, education, seasons, technological experience, and a long time to sea [4] This research will see and analyze what factors affect the income of fishermen at the cikidang fish landing port. Such as factors of age, education, work experience, to the long time at sea in one fishing trip.

## 2. METHOD

### 2.2 Time and Place

This research on the analysis of factors influencing fishermen's income at Cikidang fish landing port, Babakan Village, Pangandaran District, Pangandaran Regency, West Java Province, was carried out from May until September 2021 in the Cikidang Fish Landing Port Area, Babakan Village, Pangandaran Regency.

### 2.3 Research Methods

This research uses data collection methods. Data collection techniques used are primary and secondary data. Primary data collection techniques were carried out, among others, by making direct observations in Babakan Village, Pangandaran District, Pangandaran Regency. By taking Accidental sampling from 10% of the population of fishermen at Cikidang fish landing port so that we get 77 fishermen.

### 2.2 Data Analysis Methods

The tool used in this research is to use the IBM SPSS Statistics 25 program, which is to calculate multiple linear regression analysis. Multiple linear regression analysis intends to predict how the condition of the dependent variable will be, if two or more independent variables as predictor factors are manipulated. So, multiple linear analysis will be carried out if the number of independent variables is more than 2 variables [5].

The multiple linear regression formula with p independent variables is as in the following equation.

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + e$$

With :

Y = Fisherman's Income

a = constant

X1 = Experience

X2 = Length of Time at sea

X3 = Age

X4 = Education

X5 = Type of Fishing Equipment

b1, = Experience variable regression coefficient

b2 = variable regression coefficient Length of time at sea

b3 = age variable regression coefficient

b4 = Education variable regression coefficient

b5 = Regression coefficient of fi Type of Fishing Equipment variable

e = Error

In this research, we used 77 respondents who are fishermen at the Cikidang Pangandaran fish landing port. The question In this research questionnaire containing 30 questions related to the variables was used to collect the primary data from the respondents. Based on interviews with 77 Fishermen, the most age range is 41- 44 as many as 35% of the 77 respondents, followed by the age range of 30-34 as many as 19%. there are 10% fishermen who have work experience <10 years as many as 8 people, 55% have work experience more than 11-20 years as many as 42 fishermen, 30% have work experience more than 21-30 years of 23 people, and the remaining 5% have work experience as fishermen> 30 years of 4 people. for education, there are 35% of fishermen who did not go to school, 57% of elementary school graduates. and 8% of junior high school graduates as many as 6 fishermen.

based on the interview fishermen went to sea the most as much as 40% was 6 hours and the least 11% was 10 hours. Fishermen at Cikidang fish landing port usually go to sea from 02:00 WIB and land at fish landing port around 10:00 to 14:00 WIB. based from the interview, there are 2 fishing gears used by fishermen, namely sirang nets and tingker nets.

### 3.3 Multiple Linear Regression Analysis

Multiple linear regression calculation is used to analyze the factors that affect the income of fishermen at the Cikidang Fish Landing Port, Babakan Village, Pangandaran District, Pangandaran Regency, West Java Province. Based on the calculation results, there are 5 variables analyzed. These variables include X1 (Experience), X2 (Length of Time at sea), X3 (Age), X4 (Education), and X5 (Type of Fishing Equipment) together had a significant influence on Y (fisherman's income). Prior to forming the regression model, the classical assumptions were tested first so that the model formed gave a BLUE estimate (Best, Linear, Unbiased, Estimator). This assumption test consists of three tests, namely normality test, heteroscedasticity test, and mutikolinierity test.

Based on the SPSS output (Fig. 1), the Sig value is obtained. normality test using the KolmogorovSmirnovs method is 0.3. Because the p-value is more significant than alpha ( $0.3 > 0.05$ ), it can be concluded that the residual data is usually distributed. The heteroscedasticity test aims to test whether there is an inequality of variance in the regression model from the residuals of one observation to another observation. A good regression model is one with homoscedasticity or no heteroscedasticity. One of the methods used to detect the presence or absence of heteroscedasticity is to look at the graph plot between the predicted values of the dependent (dependent) variable, namely ZPRED, with the residual SRESID. Based on the heteroscedasticity test image (Fig. 2), it can be seen that the points spread randomly, not forming a pattern, as well as the points spread both above and below zero on the Y-axis. It can be concluded that there is no heteroscedasticity in the regression model, so the regression model is feasible to use for subsequent analysis.

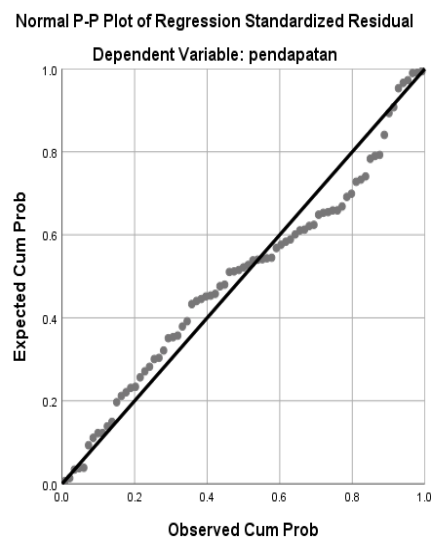
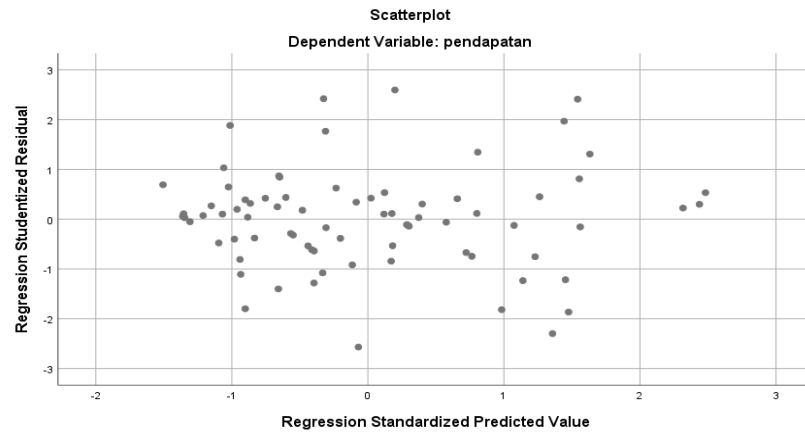


Fig 1. Normality test



**Fig 2. Heteroscedasticity**

The multicollinearity test aims to test whether there is a correlation between the independent variables in the model. A good model should not correlate with the independent variables. Based on the picture of the results of the multicollinearity test data, the VIF value of all independent variables is below 10. Based on these results, it can be concluded that there is no multicollinearity between the independent variables in the model.

### 3.3.1 Regression Model

In this research, multiple linear regression analysis is intended to determine the effect of the independent variable on the dependent variable. The goal is to predict or estimate the value of the dependent variable in a causal relationship to the value of other variables.

Based on the output above, the constant values and regression coefficients can be obtained so that multiple linear regression equations can be formed as follows:

$$Y = 275127.687 + 5911.156X_1 + 100114.909X_2 - 10567.226X_3 + 648.923X_4 - 137424.529X_5 + e$$

### 3.3.2 R Square

Pearson Product Moment correlation analysis is an analysis that is used to find a relationship and prove the hypothesis of a relationship between two or more variables if the variable data is in the form of an interval or ratio and the data sources of each variable are the same.

Based on the interpretation table of the correlation coefficient the correlation coefficient of 0.907 indicates a solid relationship between the independent variables and the dependent variable

Determination coefficient analysis is an analysis used to determine the effect of one variable on another. The coefficient of determination is the square of the correlation coefficient [6].

Based on the results of the calculation of the determination coefficient analysis, the coefficient of determination was obtained by 64.6% which indicates the meaning that the effect of X1 (Experience), X2 (Length of Time at sea), X3 (Age), X4 (Education), and X5 (Type of Fishing Equipment) together had

a significant influence on Y (Fishermen's income). The remaining 35.4% was affected by other factors not observed in the research.

$$KD = R^2 \times 100\%$$

$$= (0,804)^2 \times 100\%$$

$$= 64,6\%$$

**Tabel 1. R Square Test Result**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.897 <sup>a</sup>	.804	.790	163091.05236

### 3.3.3 F Test

Simultaneous hypothesis testing is a hypothesis testing that aims to determine whether simultaneously or simultaneously the independent variables (independent) have a significant or no significant effect on the dependent variable (dependent) [7] Based on the results of the F-test a significant value of 0.000, due to the p-value (sig) > 0.05 (alpha 5%) or 0.00 < 0.05, then H0 is rejected. meaning that the independent variable simultaneously affects the dependent variable.

### 3.3.4 T Test

#### 1. Effect of Experience Variables on Fishermen's Income In Cikidang fish landing port

After a partial test of the calculation above for variable X1 (Experience) is 0.277 Due to the p-value (sig) > 0.05 (alpha 5%) or 0.277 > 0.05 then H0 is accepted, meaning X1 (work experience) does not have a significant effect on Y (fisherman's income)/trip.

Based on the results above, it can be concluded that the fishing experience of fishermen does not affect the income of fishermen at PPI Cikidang Pangandaran. Fishermen at PPI Cikidang have experience intervals ranging from 8-35 years of experience as fishermen, fishermen who have long experience at sea are usually at an older age and have started to be unproductive so that the distance and time at sea are reduced.

This result is in line with several previous studies which stated that the experience of a fisherman had no significant effect on his income level. namely Syahma's research (2016) which examines the factors that affect the income of fishing fishermen in Takalar Regency, with the results of the calculation of a significance level of -0.571 which means it does not affect the income of fishermen in Galesong Village, Talakar Regency.

#### 2. Effect of length of sea time on Fishermen's Income In Cikidang fish landing port

Based on partial test calculations obtained a p-value for variable X3 length of sea time) is 0.000. Due to the p-value (sig) < 0.05 (alpha 5%) or 0.000 < 0.05 then H0 is rejected, meaning that X3 (long time at sea) has a significant effect on Y (fisherman's income)/trip. From these results, it can be seen that the effect of the length of time at sea on fishermen's income has a positive effect. the average length of time for fishing in PPI Cikidang is 5-15 hours where the fishermen will leave early in the morning until noon, the length of time at sea can have a significant effect because the longer the fishermen go to sea, the farther the distance that can be traveled and the possibility of getting more fish

to become bigger and vice versa. This result is in line with previous research owned by wahyuni (2019) [9] which explained that the variable of long-sea has a significant influence on fishermen catch in langkap regency.

### 3. Influence of Age on Fishermen's Income In Cikidang fish landing port

After a partial test of the calculation above for variable X4 (Age) obtained a p-value for variable X4 (age) is 0.028. Due to the p-value (sig)  $< 0.05$  (alpha 5%) or  $0.028 < 0.05$ ,  $H_0$  is accepted, meaning that X3 (Age) has an influence. significant to Y (fisherman's income)/trip. Age has an influence on the income level of fishermen at PPI Cikidang because it can be assumed that older fishermen usually work less at sea and become less productive. where fishermen in PPI Cikidang have various ages, but most of them are in the age of 30-40 years with different working hours, usually the older the fishermen, the working hours at sea are not too long. This result is in line with proprietary research such as Dwiandana's (2013) study which also explains that the age variable has no significant effect on fishermen's income. This result is in line with the research belonging to Konarlama (2020) which states that the age of fishermen affects the income of fishermen in Manado City with an average age range of 40-41 years, which means that fishermen's maturity affects skills so that it will affect the results

### 4. Effect of Education on Fishermen's Income in Cikidang fish landing port

After a partial test of the calculation above for variable X5 (Education) obtained a p-value is 0.924. Due to the p-value (sig)  $> 0.05$  (alpha 5%) or  $0.924 > 0.05$  then  $H_0$  is accepted, meaning that X5 (Education) has no significant effect on Y (fisherman's income)/trip. The latest education taken by fishermen does not significantly affect fishermen's income because in general fishermen learn and understand how to go to sea only from knowledge from generation to generation in the fishermen's environment, not from formal education. this is evident from the number of samples of fishermen taken on average the last education of fishermen at PPI Cikidang is elementary school. These results are in line with previous research by Harahap (2003) which stated that the last education of fishermen did not affect the income level of traditional fishermen in the Indah Fisherman Village, Medan District, Labuhan Kota Medan.

### 5. Effect of Variable Type of Fishing Equipment on Fishermen's Income In Cikidang fish landing port

After a partial test of the calculation above for variable X5 (Type of Fishing Equipment) is 0.004. Due to the p-value (sig)  $< 0.05$  (alpha 5%) or  $0.004 < 0.05$  then  $H_0$  is rejected, meaning that X5 (type of fishing gear) has a significant effect on Y (fisherman's income)/trip. This is because the type of fishing gear used will affect the main type of fish caught. The more expensive the price of fish obtained, the greater the income of the fishermen. The results of this study are by Prakoso's (2013) research that the fishing gear or technology used by fishermen will affect the income of a fisherman.

From the description above, it can be seen that the factors that most influence the income of fishermen are the length of time they go to sea, the type of fishing gear/ Fishing Equipment used, and also the age of the fishermen who will carry out fishing activities. From the results of interviews conducted by the authors, the fishermen revealed that in addition to the factors analyzed above, the seasonal factor is the most influencing factor for fishermen's income, fishermen in Pangandaran will go to sea and get lots of fish during the east wind season, namely in May to May. October, where during that season the waters of Pangandaran do not have big waves and tend to be calm so that fishing activities are not disturbed. On the other hand, in the western season, starting from November to April, fishermen will find it difficult to carry out fishing activities because of the erratic weather and frequent



storms. occur. The PPI Cikidang area also often experiences siltation so fishing boats become difficult to operate. In addition, limited capital is also a problem that must be taken by fishermen at PPI Cikidang considering that this research procession was carried out during the Covid-19 pandemic. Fishermen revealed that the pandemic also affected fishermen's income.

#### 4. CONCLUSION

Based on the results of the research it can be concluded that all variables together have a significant effect on Y (fisherman's income)/trip with a proportion of only 64.6%. While the remaining 35.4% is influenced by other factors not observed in this. The factors that significantly influence the income of fishermen at PPI Cikidang, Babakan Village, Pangandaran District, Pangandaran Regency are the length of time at sea, age, and type of fishing gear/Fishing Equipment while the experience and education variables have no significant effect on fishermen's income. suggestions that can be given about this research are in accordance with the results of the research where capital and length of time at sea have the most influence on fishermen's income, so it is better if fishermen who have or have not joined actively in existing cooperatives so that the cooperative can help fishermen in capital matters so that the time and distance to go to sea can be increased and fishermen's income can increase. In addition, fishermen are also advised to have other businesses that can be done when the season or the weather is not allowing to go to sea.

#### DISCLAIMER:

Authors have declared that no competing interests exist. The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

#### REFERENCES

1. Nurhayati, A. 2013. Analysis of The Sustainable Potential of Fishing Catch in Pangandaran Area. *Journal of Aquatics*, 4 (2).
2. BPS Pangandaran. Pangandaran in 2018 figures. BPS Catalog: 1102001.3218
3. Kusnadi. 2002. Fishermen: Adaptation Strategies and Social Networks (Bandung: Main Humanities
4. Asmita. 2016. Analysis of Factors Affecting Fishermen's Income In Galesong Village Galesong District City Takalar Regency. Faculty of Economics, Makassar State University.
5. Sudarmanto, R. Gunawan. 2005. Double Linear Regression Analysis with SPSS, First edition, Yogyakarta: Graha Ilmu.
6. Press.Sugiyono. 2017. Quantitative, Qualitative, and R&D. Bandung Research Methods: Alfabeta.
7. Sugiyono. 2003. Research methods. Bandung: Alfabeta.
8. Nirmawati. 2018. Factors That Affect the Income Level of Fishermen in Pajjukukang District of Bantaeng Regency. thesis, Alauddin State Islamic University makassar.
9. Wahyuni, Eka. 2019. Factors affecting Fishermen's Income in Bulukumba Regency. thesis, Alauddin State Islamic University makassar.



10. Harahap. 2003. Analysis of Poverty Problems and Income Levels of Traditional Fishermen in The Village of Beautiful Fishermen Medan Labuhan District of Medan City. Master's thesis. University of North Sumatra
11. Ridha, A. 2017. Analysis of Factors Affecting Fishermen's Income in Idi Rayeuk Subdistrict. Journal of Ocean Economics and Business, Vol.8, No.1

UNDER PEER REVIEW