# Original Research Article

# Analysis of Factors Affecting Fishermen's Income at the Cikidang Fish Landing Port, Babakan Village, Pangandaran Regency, West Java Province, Indonesia


**ABSTRACT**

This Research aims to analyze the factors that influence the income of fishermen in Babakan Village, Pangandaran Regency, West Java Province. This research was conducted from May until September 2021. This research was conducted using a simple random sampling method. Sampling was carried out by 77 fishermen from 10% of fishermen who landed their caught fish at Cikidang fish landing port, Babakan Village, Pangandaran District, Pangandaran Regency, West Java Province. The data analysis used is multiple linear regression analysis and descriptive analysis. The results of multiple linear regression analysis showed that $X_2$ (Capital), $X_3$ (Long Time at Sea), and $X_6$ (Fish Price) had a significant effect on Y (fisherman's income). While $X_1$ (Experience), $X_4$ (Age), and $X_5$ (Education) have no significant effect on Y (Fishermen's Income) the income of fishermen at Cikidang fish landing port.



*Keywords: Revenue, Fishermen, Fish landing port*




## 1. INTRODUCTION

Pangandaran Regency 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.

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 simple random sampling and using the slovin method to calculate the number of samples 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.

$Y = a + b_1X_1 + b_2X_2 + b_3X_3+b_4X_4+ b_5X_5+b_6X_6+e$

With :

Y = Fisherman's Income

a = constant

X1 = Experience (Years)

X2 = Capital (Rp)

X3 = Length of Time at Sea (hours)

X4 = Age (Years)

X5 = Education (0=no school, 1=elementary school, and 2=junior high school)

X6 = Fish Price

b1,= Experience variable regression coefficient

b2 = regression coefficient of modal variable

b3 = variable regression coefficient Length of time at sea

b4 = age variable regression coefficient

b5 = Education variable regression coefficient

b6 = Regression coefficient of fish price variable

e = Error

The multiple linear regression analysis, do a classic assumption test first. The classical assumption test consists of the normality, multicollinearity, and heteroscedasticity tests. Then proceed with making a regression model with statistical tests consisting of the R-Square Test and ANOVA (F Test and T-Test).

## 3. RESULTS AND DISCUSSION

### 3.1 General Condition Of Research Area

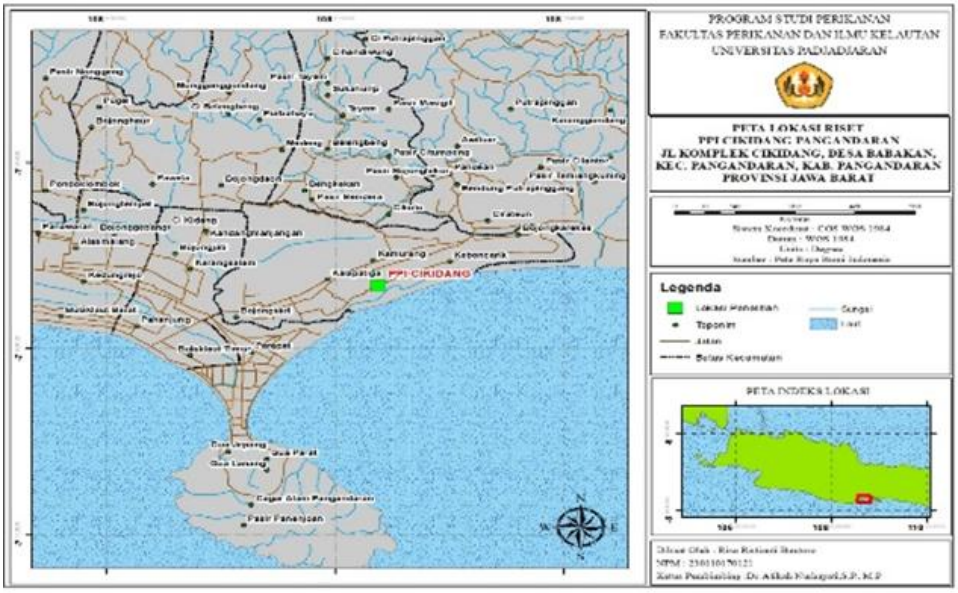


Fig. 1 Map Location of research

Cikidang Fish Landing Port is located in Pangandaran Regency of West Java Province. Pangandaran Regency is a Regency in West Java Province which was formed based on government regulation No. 21 of 2012. Pangandaran Regency has a total area of + 1,010 km2, Pangandaran Regency consists of 10 district. Geographically Cikidang fish landing port is at 7o40'563"LS 180o 40. 18.8" BT, and administratively located in babakan village, Pangandaran subdistrict, which has an area of 6.04 km2, with a population of 11,203 people who mostly work in the fisheries sector (fishermen) and agriculture sector (farmers). The location of Cikidang Fish Landing Port is flanked by two rivers, namely, ciputrapinggan river to the east and Cikidang river to the west and is close to the East Coast area of Pangandaran which is an access the exit and entry of fishermen who want and have been at sea in pangandaran.

### 3.2 Characteristics Of Respondents

Respondents at the cikidang fish landing port based on the most age found 48% aged 30-40 years, based on the level of education only up to elementary school which is as much as 57%, based on experience as fishermen 11-20 years as much as 55%, 29% of respondents spend money on sea capital as much as Rp. 250,000 and based on the length of sea time as much as 40% and respondents sea for 6 hours.

### 3.3 Multiple Linear Regression Analysis

#### 3.3.1 Normality Test

Based on the SPSS output (fig. 2), the Sig value is obtained. normality test using the Kolmogorov-Smirnovs method is 0.200. Because the p-value is more significant than alpha (0.200 > 0.05), it can be concluded that the residual data is usually distributed

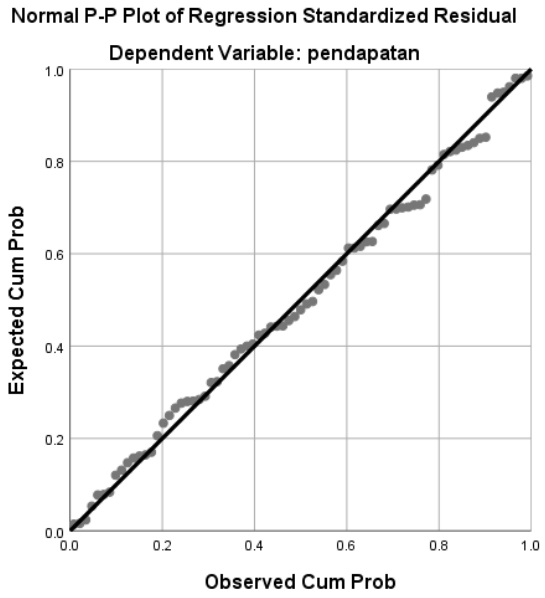


**Fig 2. Normality Test**

### 3.3.2 Heteroscedasticity Test

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 (figure 3), 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.

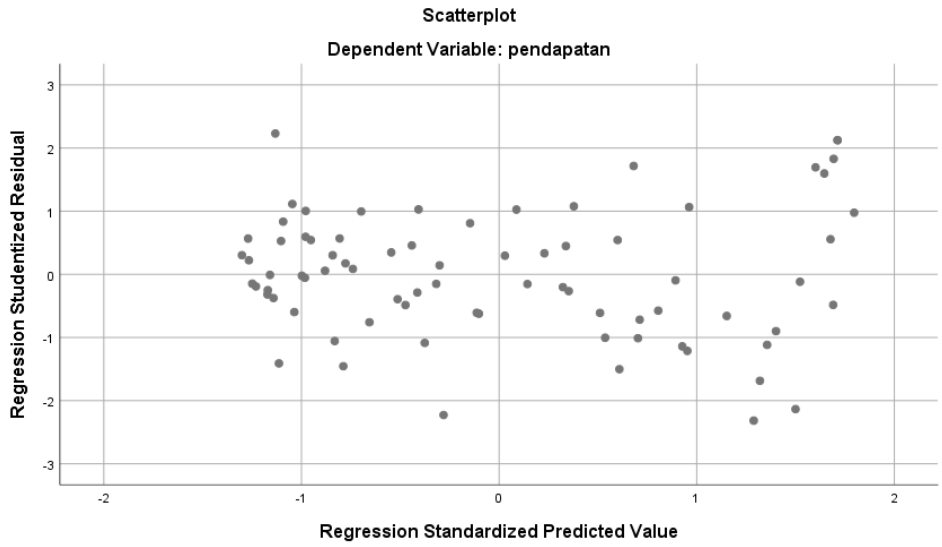


**Fig 3. Heteroscedasticity**

### 3.3.3. Multicollinearity Test

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.

### 3.3.4 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:

$$\mathbf{Y= -97606,60+ 3458,25\ X_1 + 2,250X_2 + 54523,57X_3 -7206,16X4 -15809,51X5 + 1,688\ X_6 + e}$$

### 3.3.5 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 presented above (table 1), the correlation coefficient of 0.907 indicates a solid relationship between the independent variables and the dependent variable [6]

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 67.5% which indicates the meaning that the effect of $X_1$ (work experience), $X_2$ (trip capital), $X_3$ (length of sea time), $X_4$ (age) and $X_5$ (education), and $X_6$ (Fish Price) of 67.5% on Y (Fishermen's income). The remaining 32.5% was affected by other factors not observed in the research.

KD = R2 × 100%

= (0.822)2 × 100%

= 67.5%

**Tabel** 1**. R Square Test Result**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| 1 | .907[a] | .822 | .807 | 156431.935 |

### 3.3.5 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.

### 3.3.6 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 (Sea Experience) obtained a p-value of 0.506 because the value of p-value (sig) > 0.05 (alpha 5%) or 0.506 > 0.05 which means H0 is accepted, then X1 (work experience) does not have a significant influence on Y (fishermen's income) / trip.

Based on the results above, it can be concluded that the experience of sea fishermen has no effect on fishermen's income in Cikidang fish landing port pangandaran. Fishermen in Cikidang fish landing port have intervals of experience from 8-35 years of experience to become fishermen, fishermen who have longer experience of sea are usually in an older age and have started to be unproductive so that the distance and length of sea becomes reduced. These results are in line with some previous studies that stated that a fisherman's experience had no significant effect on his income level. Asmita's research (2016) [4] examined factors that affect the income of fishermen in talakar regency, with the result of calculating the significance level of -0.571 which means it has no influence on the income of fishermen in galesong village, talakar regency.

**2. Influence of Capital Influence on Fishermen's Income in Cikidang fish landing port**

Based on partial test calculations obtained a p-value value for variable X2 (modal) / trip of 0.002. Because the p-value (sig) value < 0.05 (alpha 5%) or 0.002 < 0.05, H0 is rejected, meaning X2 (capital) has a significant influence on Y (fishermen's income) / trip. Based on these results, it can be concluded that the capital of fishermen in one trip affects the number of fishermen in Cikidang fish landing port. Fishermen in Cikidang fish landing port in one trip to sea ordain different costs ranging from Rp. 150,000 to Rp. 300,000 depending on distance, gasoline costs and others. From the value of the calculation of linear regression doubles obtained the value of the equation X2 of 2,250 which means that every time the addition of capital then the income of fishermen will increase by 2,250. the results concluded above are in line with previous research owned by Nirmawati (2018) [8], which stated that sea capital significantly affects fishermen's income in the pajukukang sub-district, bantaeng regency.

**3. Effect of Long 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) of 0.001. Because the value of p-value (sig) < 0.05 (alpha 5%) or 0.001 < 0.05 then H0 is rejected, meaning X3 (length of sea time) has a significant influence on Y (fishermen's income) / trip. From these results it can be seen that the influence of long time at sea on fishermen's income has a positive effect.

The average length of sea time of fishermen in Cikidang fish landing port is 5-15 hours where the fishermen will leave early in the morning to noon, the length of sea time can significantly affect because the longer fishermen go to sea, the longer the distance that can be traveled and the possibility of getting more fish becomes larger 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.

**4. 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) of 0.125 because the value p-value (sig) > 0.05 (alpha 5%) or 0.125 > 0.05 then H0 is accepted, meaning X4 (Age) does not have a significant effect on Y (fishermen's income) / trip. Age does not have an influence on the income level of fishermen in Cikidang fish landing port where fishermen in Cikidang fish landing port have a diverse age but the shadow is in the age of 30-40 years with different working hours usually the older the age of fishermen then the working hours of the sea are not too long.

From the results of partial calculations obtained a significant value of 0.125 which means more than 0.05 then the age of fishermen does not significantly affect the income of fishermen, as well as the results of regression equality that states that age has no effect on fishermen's income.

**5. 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 for variable X3 length of sea time) of 0.651. Because the value p-value (sig) >0.05 (alpha 5%) or 0.651> 0.05 then H0 is accepted, meaning X5 (Education) does not have a significant influence on Y (fishermen's income) / trip. The last education taken by fishermen does not significantly affect the income of fishermen because in general the fishermen learn and understand about how to go to sea only from knowledge down and down in the fishermen's environment not from formal education. This is evident from the number of fishermen samples taken on average the last education of fishermen in Cikidang fish landing port is elementary school. This result is in line with previous research owned by Harahap (2003) [10] which stated that the last education of fishermen did not affect the income level of traditional fishermen in the village of fishermen of Medan subdistrict, Labuhan Medan city.

**6. Effect of Variable Fish Prices on Fishermen's Income In Cikidang fish landing port**

Based on partial tests that have been done, the result is a p-value for variable X6 fish price of 0.001. Because the value of p-value (sig) <0.05 (alpha 5%) or 0.001> 0.05, H0 is rejected, meaning that X6 (fish price) has a significant influence on Y (fishermen's income) / trip in Cikidang fish landing port Babakan Village Pangandaran District Pangandaran. This result is in accordance with previous research owned by Ahmad Ridha (2017) [11] which explained that the price of fish is very influential on the income of fishermen in Idy Rayeuk district this happens because the higher the price of fish, the higher the income obtained by fishermen.

**4. CONCLUSION**

Based on the results of the research it can be concluded that X2 (capital), X3 (long time at sea) and X6 (fish price), have an influence on the income of fishermen at Cikidang fish landing port. Y (fisherman's income)/trip with influence only 67.5%. While the remaining 32.5% is influenced by other factors not observed in this research, 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.

## COMPETING INTERESTS 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.



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