

# The Effect of Fishermen's Income Factors on Fishermen's Poverty on The North Coast of Jakarta

Virida Martogi Hasiholan<sup>1\*</sup>, Akhmad Fauzi<sup>2</sup>, Rilus Ardi Kinseng<sup>3</sup>

<sup>1\*</sup> Study Program of Regional and Rural Development Planning, IPB University, Bogor Regency, West Java Province, Indonesia.

<sup>2</sup> Faculty of Economics and Management, IPB University, Bogor Regency, West Java Province, Indonesia.

<sup>3</sup> Faculty of Human Ecology, IPB University, Bogor Regency, West Java Province, Indonesia.

**Abstrak.** Kemiskinan masih terjadi di kalangan nelayan di tengah melimpahnya kekayaan sumber daya laut Indonesia, dimana potensi pesisir dan laut yang cukup besar belum meningkatkan kesejahteraan hidup nelayan. Penelitian ini bertujuan untuk mengetahui tingkat kemiskinan dan menganalisis faktor-faktor yang mempengaruhi pendapatan nelayan di Pesisir Utara Jakarta yang menyebabkan kemiskinan. Penelitian ini dilakukan pada bulan Januari – Februari 2023 melalui survei dengan pemilihan responden menggunakan teknik stratified-accidental sampling. Responden dalam penelitian ini berjumlah 100 responden yang diambil secara proporsional pada setiap tingkatan. Teknik pengolahan dan analisis data penelitian ini menggunakan analisis tingkat kemiskinan dan regresi linier berganda. Berdasarkan hasil penelitian, tingkat kemiskinan nelayan di Pesisir Utara Jakarta, jika dibandingkan dengan garis kemiskinan Badan Pusat Statistik, 44 nelayan dari 100 nelayan memiliki pendapatan di bawah Rp17.852,00/kapita/hari. Sebagai perbandingan, jika dibandingkan garis kemiskinan Bank Dunia, terdapat 71 nelayan dari 100 nelayan yang hidup di bawah garis kemiskinan Bank Dunia karena pendapatan yang diperoleh kurang dari Rp 32.812,00/kapita/hari. Faktor yang mempengaruhi pendapatan nelayan di Pesisir Utara Jakarta yang menyebabkan kemiskinan adalah ukuran perahu. Sebaliknya faktor usia, tingkat pendidikan, dan pengalaman kerja tidak mempengaruhi pendapatan nelayan, sehingga faktor tersebut tidak berpengaruh secara signifikan terhadap kemiskinan nelayan di Pantai Utara Jakarta. Mengetahui bahwa variabel ukuran perahu berpengaruh signifikan terhadap pendapatan nelayan di Pesisir Utara Jakarta, maka diharapkan Pemerintah dapat memberikan bantuan sarana dan prasarana berupa perahu dengan ukuran perahu yang lebih besar dan mempermudah mekanisme permohonan dalam memperoleh bantuan tersebut. Sehingga diharapkan bantuan perahu ini dapat meningkatkan hasil tangkapan nelayan serta meningkatkan pendapatan dan kesejahteraan nelayan sehingga kemiskinan nelayan di Pantai Utara Jakarta dapat berkurang.

**Kata kunci:** Kemiskinan Nelayan; Pantai Utara Jakarta; Pendapatan Nelayan; Ukuran Kapal.

**Abstract.** Poverty still occurs among fishermen amid the abundance of wealth in Indonesia's marine resources, where the substantial coastal and marine potential has not improved the welfare of fishermen's lives. This study aims to determine the poverty level and analyze the factors that affect fishermen's income on the North Coast of Jakarta that cause poverty. This research was conducted in January – February 2023 through a survey with the selection of respondents using stratified-accidental sampling techniques. Respondents in this study amounted to 100 respondents who were taken proportionally at each level. This study's data processing and analysis techniques used poverty-level and multiple linear regression analyses. Based on the research results, the poverty level of fishermen on the North Coast of Jakarta, when compared to the Central Bureau of Statistics poverty line, 44 fishermen out of 100 have incomes below IDR 17.852,00/capita/day. In comparison, when compared to the World Bank poverty line, there are 71 fishermen out of 100 fishermen living below the World Bank poverty line because the income obtained is less than IDR 32.812,00/capita/day. The factors affecting fishermen's income on the North Coast of Jakarta that cause poverty are the size of the boat. In contrast, factors such as age, education level, and work experience do not affect fishermen's income, so these factors do not significantly affect the poverty of fishermen on the North Coast of Jakarta. Knowing that the variable size of the boat significantly affects fishermen's income on the North Coast of Jakarta, it is expected that the Government can provide facilities and infrastructure assistance in the form of boats with larger boat sizes and simplify the application mechanism in obtaining such assistance. So it is hoped that the help of this boat can increase catches for fishermen and increase the income and welfare of fishermen so that the poverty of fishermen on the North Coast of Jakarta can be reduced.

**Keywords:** Fishermen's Poverty; North Coast of Jakarta; Fishermen's Income; Boat Size.

\* Author. Email Corresponding: [viridamartogi@apps.ipb.ac.id](mailto:viridamartogi@apps.ipb.ac.id) <sup>1\*</sup>

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## Introduction

Poverty persists among fishermen despite the abundant wealth of Indonesia's marine resources. The significant coastal and marine potential has failed to improve the welfare of these fishermen. Coastal areas in Indonesia are widely recognized as impoverished, slum-ridden, and lagging. This situation is particularly ironic when considering the wealth of natural resources in these coastal areas, which have the potential for economic development. However, the existing development efforts have exacerbated critical issues such as rising unemployment and poverty. Data from the Ministry of Marine Affairs and Fisheries in 2015 indicates that 32.14% of the national population living in coastal areas were classified as poor, amounting to 28.59 million people. Thus, the poverty figures for coastal areas in 2015 reached 7.18 million individuals (Sabarisman, 2017).

The problem of poverty in coastal areas also extends to DKI Jakarta Province, the capital of Indonesia. According to the Central Bureau of Statistics in 2015, DKI Jakarta Province reported that 7.94% of households involved in fishing at sea were categorized as poor (Badan Pusat Statistik, 2015). Given the multidimensional nature of fishermen's poverty, it necessitates a comprehensive solution rather than a partial one (Suharto, 2009). Therefore, it is crucial to identify the root causes of poverty in fishing communities. The poverty status of fishing households can be assessed using the poverty line criteria established by the World Bank and the Central Bureau of Statistics. As per the World Bank's Poverty Line outlined in the East Asia and The Pacific Economic Update October 2022 report, the poverty threshold stands at US\$2.15 per capita per day or IDR 32,812.00 per capita per day, equivalent to IDR 984,360.00 per capita per month using an exchange rate of IDR 15,261.00/US\$. In contrast, the Central Bureau of Statistics' Poverty Line as of September 2022 is IDR 535,547.00 per capita per month or IDR 17,852.00 per capita per day (Badan Pusat Statistik, 2022).

The relationship between impoverished fishermen and regional development arises

from the poverty of the fishermen themselves, which contributes to the overall poverty and underdevelopment of coastal areas. Since these fishermen reside in coastal areas, these regions need to catch up with the progress seen in other developed areas. Consequently, it is vital to conduct research on the poverty levels of fishermen on the North Coast of Jakarta and analyze the factors that influence their income, thereby causing poverty.

## Literature Review

### Poverty

In general, poverty can be distinguished by several definitions, such as according to Mangkuprawira (1993) that *poverty* is defined as a form of helplessness in fulfilling basic needs, both material and non-material. *Poverty* is also defined as a condition in which a person cannot meet his basic needs, namely the need for food (Hermanto, 1995). Kartasmita (1996) states that basic needs are always associated with poverty because the problem of poverty is the nation's obsession and a fundamental problem that must be addressed. People with low incomes generally need more income or even no income at all. They have soft business skills and limited access to economic activities and development, so they need to catch up to the rest of society. Poverty illustrates conditions of lack such as insufficient knowledge and skills, limited capital owned, low income, and low productivity and exchange rate of production products. However, this view is challenged by Karl Marx in Wood (2002) and Macarov (2003), that poverty is caused by things of a more structural nature. Macarov (2003) divides this opinion into several things, including concerning minority groups as the most vulnerable and many in poverty. In this case, poverty in minority groups is due to discrimination that often afflicts poor people. Minority groups are often discriminated against in various ways, including in economic terms. This has led to many minority groups living in poor conditions—those who live in poverty, because of which their economic access is impeded. Academics and philosophical may have different views on determining poverty parameters, but the substance to be achieved remains the same, namely measuring the level of welfare of people in a region. It is common because poverty is

a *multifaceted phenomenon* which means that the problem of poverty has many dimensions whose measurements can vary, both economic, political, sociocultural, scientific, and technological dimensions, and other dimensions that will produce a variety of poverty maps, although still pointing to the same layer.

Philosophical Sen (2000) suggests six poverty alleviation packages, namely: 1) Human capital, especially in health, nutrition, and skills acquired through education and training; 2) Business capital, the means necessary in transportation for agriculture, industry and services; 3) Infrastructure: roads, electric power, drinking water, sanitation; 4) Natural capital in the form of agricultural land and biodiversity; 5) Capital of public institutions such as commercial law, judicial law, and government services; 6) Knowledge capital in the form of know-how science and technology that increase productivity can increase natural capital.

### **Fishermen's Poverty**

Nikijuluw (2001) stated that poverty is an indicator of the underdevelopment of coastal communities caused by three main things, namely: (1) structural poverty, namely poverty caused by the influence of external factors or variables outside the individual, such as the socioeconomic structure of the community, the availability of development facilities, the availability of incentives or disincentives, the availability of technology, and the availability of development resources, incredibly natural resources. The relationship between this factor or variable and poverty is generally reversed. This means that the higher the intensity, volume and quality of these variables, the less poverty will be, especially for socioeconomic variables, where the relationship with poverty is more difficult to ascertain. What is clear is that the socioeconomic conditions of the people that occur within the fishermen's sphere determine their poverty and welfare; (2) super-structural poverty, namely poverty caused by macro policy variables that are not so strongly pro on fishermen's development such as monetary policy, fiscal policy, availability of laws and regulations, and government policies implemented in development programs. This super-structural poverty is particularly

problematic if it is not accompanied by a genuine commitment from the government to address it. These difficulties are also caused by competition between regions, sectors, and institutions, resulting in inequality and development gaps. If the government, both from the central and local levels, has particular commitments such as affirmative actions for people experiencing poverty, then this super-structural poverty can be overcome; and (3) cultural poverty, namely poverty caused by variables that are inherent and become a particular lifestyle that makes it difficult for individuals to get out of poverty because they are it is not realized by the individual concerned. The level of education, knowledge, culture, customs, beliefs, adherence, and loyalty to views cause cultural poverty. In general, the influence (patron) of formal, informal, or *indigenous* patrons determines the success of these cultural poverty alleviation efforts.

Resource economists view the poverty of coastal communities, especially fishermen, as more due to socioeconomic factors related to the characteristics of resources and technology used so that fishermen remain in poverty. In addition, lack of business opportunities, access to information and capital, and lifestyles that tend to be wasteful have weakened the bargaining position of poor coastal communities. This is compounded by government policies that have been less pro to coastal communities as one of the stakeholders in coastal areas (Basri, 2007). Commitment to the utilization of marine resources is still lacking, showing that fishermen, as the main actors in this sector, are still below the poverty line. Data from the National Socioeconomic Survey in 2017 shows a trend in fishermen's highest aggregate poverty level compared to the average of rural and other agricultural sectors. As of March 2018, there were 744 thousand of poor people in the fisheries sector, and fishermen with self-employed status tend to be more vulnerable than almost all other agricultural sectors (Anna, 2019). Some factors that result in fishermen's poverty are low education levels, low incomes, economic behaviour or lifestyles of fishermen households that tend to be wasteful, limited capital to develop businesses, no alternative livelihoods and unsupportive regional planning

(Sadik, 2012). Fishermen's welfare indicators summarized in the fishermen's exchange rate (NTN) can still be applied as one of the primary references for formulating development policies for the marine and fisheries sector. To hone analysis and policies for empowering fishing communities, fishermen's exchange rate indicators (NTN) must be combined with primary data and poverty indicators in coastal Indonesia. According to the Directorate General of Marine Coastal and Small Islands Affairs (2004) in Basri (2007), the measurement of welfare indicators is carried out on the aspects of (1) People's welfare, which includes health, education, labour, mortality and fertility, housing and household consumption expenditure; (2) Fisherman Exchange Rate (NTN); (3) Poverty in coastal communities, which includes household consumption receipts and expenditures; (4) The poverty map includes indicators of *the poverty headcount index, the poverty gap index and the severity of poverty*.

## Methodology

### Location and Time of Research

The fishing communities that the author studied in this study are fishing communities living on the coast of Kamalmuara Urban Village, Penjaringan District, North Jakarta City. The research implementation time starts in January – February 2023.

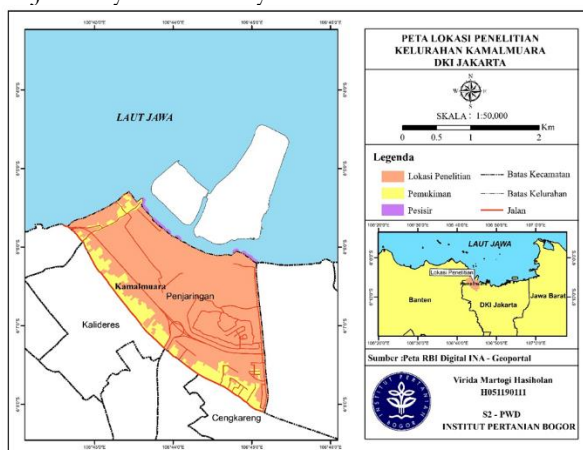


Figure 1. Map of the Research Location  
Source: Personal Documents (2023)

### Data Collection Techniques

The type of data collected in this study is in the form of primary data and secondary data. Primary data was collected from coastal

communities living on the coast of Kamalmuara Urban Village, Penjaringan District, North Jakarta City. Secondary data was collected from the internet, government agencies, agencies or institutions related to this study. Data collection techniques in this study were carried out using surveys. Respondents were selected using stratified-accidental sampling techniques (Kinseng *et al.*, 2014) to find fishermen who can be met from each social class to be interviewed as respondents. Respondents in this study amounted to 100 respondents who were taken proportionally per strata. In this study, the status of fishermen classes is grouped into 3 classes, namely: (1) fishermen who own small-scale boats with a boat size of  $\leq 10$  GT; (2) fishermen who own medium-scale boats with boat sizes of 10 GT to 50 GT; and (3) labour fishing communities/crew members (ABK).

### Data Processing and Analysis Techniques Poverty Level Analysis

To determine the poverty level of fishermen on the North Coast of Jakarta, the data taken is quantitative data in the form of fishermen's income (IDR/capita/day) obtained from the survey and then will be analyzed using poverty level analysis. The poverty level will be analyzed by comparing using the Poverty Line indicator of the Central Bureau of Statistics in September 2022, which is IDR 535.547,00/capita/month or IDR 17.852,00/capita/day and the World Bank Poverty Line indicator in PPP 2017 which is US\$2,15/capita/day or IDR 32.812,00/capita/day or IDR 984.360,00/capita/month if assumed using the exchange rate of IDR 15.261,00/US\$.

### Multiple Linear Regression Analysis

To analyze the factors that affect the income of fishermen on the North Coast of Jakarta that cause poverty, the data taken in the form of quantitative data such as age, education level, work experience as a fisherman and boat size obtained from the survey and will be processed using multiple linear regression analysis with the help of *IBM SPSS Statistics 26*. The use of multiple linear regression analysis models is used to determine the magnitude of the independent variable against the dependent variable. Multiple linear regression was used to analyze the effect of age, education level, work

experience and boat size on the poverty of fishing communities on the North Coast of Jakarta. This study uses the formula of multiple linear regression equations as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e \tag{1}$$

Where the dependent variable denoted by notation *Y* is Income, while the independent variable is: *X*<sub>1</sub> is Age (years); *X*<sub>2</sub> is Education Level (years); *X*<sub>3</sub> is Work Experience (years); *X*<sub>4</sub> = Boat Size (GT); and *a* is the Regression Constant;  $\beta_1\beta_2\beta_3\beta_4$  is the Regression Coefficients; and *e* is the Error Standard.

## Results and Discussion

### Characteristics of Research Respondents

Primary data was obtained from a survey of 100 fishermen taken proportionally per strata using stratified-accidental sampling, and then the sex of respondents in this study was male. This result shows that the most significant percentage of results are respondents with male sex with a percentage of 100% or as many as 100 fishermen. While for respondents with female sex of 0% or none. Because fishermen work is a job with high risk and is quite time-consuming and energy-consuming, it is infrequent to find female fishermen. Fishermen's activities have K3 work hazards because fishermen must continuously make movements during the fishing process, so they experience muscle fatigue and disorders of the skeletal and muscular system, therefore, fishermen need tremendous energy (Sholihah *et al.*, 2016).

The level of education in this study can be seen in Table 1, which is divided into 3 levels. Based on the data in Table 1, respondents in this study had a low education level of 36 fishermen or 36%, a medium education level of 30 fishermen or 30%, and a higher education level of 34 fishermen or 34%.

Table 1. Number and Percentage of Kamalmuara Respondents Based on Education Level

Education Level Criteria	Education Level (Year)	Number of Respondents (Fisherme)	Percentage (%)
Low	0 – 8	36	36
Medium	9 – 11	30	30
Higher	12 – 21	34	34
Total		100	100

Source: Primary data output after processing, 2023; (Hasiholan, 2023)

Based on the data in Table 1, respondents in this study had a low education level of 36 fishermen or 36%, a medium education level of 30 fishermen or 30%, and a higher education level of 34 fishermen or 34%. When viewed from a survey of 100 fishermen in Kamalmuara Urban Village, most respondents had a low level of education. As many as 36 fishermen are not in school or have not finished elementary school, graduated from elementary school, and have already attended junior high school even though they did not finish junior high school. This is due to the lack of money owed by fishing families to go to school, so from childhood, they did not go to school and went to the sea to help find fish. In addition, there is a mindset in the fishing community that when they become fishermen, they do not need to go to high school to get a diploma because fishermen need a healthy and robust body, so they are better off helping their parents than going to school. Therefore, with the mindset that education is not vital if one becomes a fisherman, making a low level of education among the fishing communities. Many people have found that the education level of fishermen's children is only at the primary and secondary levels because it is based on the perception that fishermen do not need a school diploma and only use energy and muscles to go to sea (Ramadhani *et al.*, 2022). Another cause of fishermen's low level of education is the influence of the environment and friends. Another problem of education in fishing communities is caused by the desire of the fishermen's children who do not want to continue school anymore and the influence of friends who do not go to school or drop out of school and work as fishermen (Rochmatuzzahroh *et al.*, 2021).

Based on the survey results obtained from 100 respondents, it is known that respondents' ages range from 15 – 68 years. The youngest age of respondents obtained in this study was 19 years, while the oldest age of respondents obtained in this study was 68 years. The average age of respondents in the study was 46 years. Most respondents found in this study were in the age group with the age range of 40 – 64 years, as seen in Table 2.

Table 2. Number and Percentage of Kamalmuara Respondents Based on Fishermen's Age

Age of Fisherman (Year)	Number of Respondents (Fishermen)	Percentage (%)
15 – 39	32	32
40 – 64	64	64
65+	4	4
Total	100	100

Source: Primary data output after processing, 2023; (Hasiholan, 2023).

Table 2 shows that many respondents in this study are 64%, in the age group with an age range of 40 – 64 years which amounts to 64 fishermen. Then 32% of respondents were in the age group aged 15 – 39 years, totalling 32 fishermen. While respondents who fall into the age group with an age range of 65 years and over (old age) are only 4% with 4 fishermen. Because the age of 65 and over is an age that is no longer productive. Workers of productive age (15 – 64 years) tend to have more potent energy and physique than workers of non-productive age (65 years and over). The higher the age of fishermen, the lower the level of productivity due to energy, physical and health that decreases with age. The elderly group experienced decreased muscle mass and strength involving the peripheral and central nervous systems, immunological, hormonal, and nutritional status, resulting in reduced physical activity (Darwis, *et al.* 2022).

Table 3. Number and Percentage of Kamalmuara Respondents Based on Work Experience

Work Experience (Year)	Number of Respondents (Fishermen)	Percentage (%)
0 – 14	28	28
15 – 29	29	29
30+	43	43

Work Experience (Year)	Number of Respondents (Fishermen)	Percentage (%)
Total	100	100

Source: Primary data output after processing, 2023; (Hasiholan, 2023).

Based on the survey results obtained from 100 fishermen, it is known that the average work experience of fishermen in Kamalmuara Urban Village is 26 years, with the most extended work experience as a fisherman at 53 years and the shortest work experience as a fisherman at 2 years. Table 3 shows that 28 fishermen have work experience for 0 – 14 years with a percentage of 28%, 29 fishermen have work experience for 15 – 29 years with a percentage of 29%, and 43 fishermen have work experience over 30 years with a percentage of 43%.

Table 4. Number and Percentage of Kamalmuara Respondents Based on Boat Size

Boat Size (GT)	Number of Respondents (Fishermen)	Percentage (%)
≤ 10	68	68
10 – 50	32	32
≥ 50	0	0
Total	100	100

Source: Primary data output after processing, 2023; (Hasiholan, 2023).

Table 4 shows that 68 fishermen in Kamalmuara Urban Village have boats of ≤ 10 GT, then 32 fishermen have boats of 10 – 50 GT, while none of the respondents has boats of 50 GT and above. Based on the survey results obtained from 100 fishermen, it is known that the most extensive boat size is 25 GT, and the smallest boat size is 4 GT. Based on the survey results, the boat size in Kamalmuara Urban Village is dominated by boat size of 5 GT. Therefore, the fishing area in Kamalmuara Urban Village is only near the coast or shallow waters of Jakarta Bay and carries out fishing in one day (one day trip). The fishing area of fishermen with small boats in Kamalmuara Urban Village is generally in the Jakarta Bay and Thousand Islands inshore, and only a small number of fishermen whose fishing areas are in the North Sea of Java (Anugrahini, 2018).

### Poverty Level of Fishermen on the North Coast of Jakarta

The poverty level in this study is divided into 3 levels of fishermen's income (IDR/capita/day); namely (1) Income less than IDR 17.852,00/capita/day; (2) Income between

IDR 17.852,00/capita/day – IDR 32.812,00/capita/day; and (3) Income of more than IDR 32.812,00/capita/day as described in Figure 2.

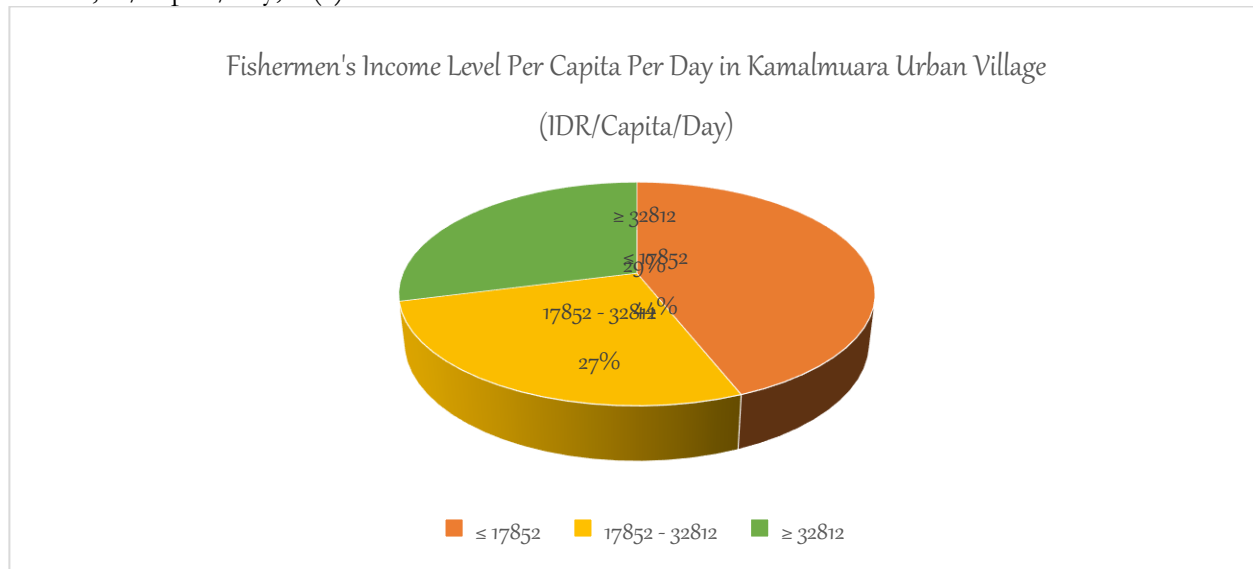


Figure 2. Kamalmuara Fishermen's Income Level Per Capita Per Day  
 Source: Primary data output after processing, 2023; (Hasiholan, 2023)

Based on the results of a survey conducted in Kamalmuara Urban Village, it was found that the average income of fishermen in Kamalmuara Village is IDR 22.401,00/capita/day, with the most significant income of fishermen at IDR 50.000,00/capita/day, and a minor income of fishermen in Kamalmuara Village at IDR 4.333,00/capita/day. To determine the poverty rate of fishermen on the North Coast of Jakarta, fishermen's income data (IDR/capita/day) obtained from the survey was analyzed using poverty level analysis by comparing using the Central Bureau of Statistics Poverty Line indicator in September 2022, which was IDR 17.852,00/capita/day and the World Bank's Poverty Line indicator in PPP 2017 is US\$2,15/capita/day or IDR 32.812,00/capita/day if assumed to use the exchange rate of IDR 15.261,00/US\$.

When compared to the Poverty Line of the Central Bureau of Statistics in September 2022 of IDR 17.852,00/capita/day, there are 44 fishermen out of 100 fishermen surveyed who have income below IDR 17.852,00/capita/day, while when compared to the World Bank Poverty Line in PPP 2017 of IDR

32.812,00/capita/day, there are 71 fishermen out of 100 fishermen living below the World Bank poverty line because the income earned is less than IDR 32.812,00/capita/day. The increase in the number of poor fishermen by 27 fishermen from the Central Bureau of Statistics poverty line was due to increased food and energy prices, affecting people's purchasing power. The World Bank report in "Indonesia Economic Prospect: Financial Deepening for Stronger Growth and Sustainable Recovery", published in June 2022, states that there is an increase in poor people by 435.000 people in Indonesia due to rising food and energy prices. Surging food and energy prices can negatively impact purchasing power and poverty, with the World Bank finding that rising food, energy and transportation prices together can increase poverty rates by 0,2 per cent in an extreme scenario equivalent to putting 435.000 people into poverty and price shocks can also reduce people's purchasing power by up to 0,6 per cent from early consumption levels (The World Bank, 2022). Meanwhile, the increase in the number and percentage of poor fishermen also occurred due to restrictions on community mobility during the COVID-19 pandemic, which reduced fishermen's income because

there were no side jobs that fishermen could do.

### Factors Causing Fishermen's Poverty on the North Coast of Jakarta

Multiple linear regression analysis in this study was used to analyze the factors that affect fishermen's income on the North Coast of Jakarta, causing poverty. Previously, a test of the assumption of normality and linearity of data will be carried out.

In the normality test, the value of p-value (Sig.) = 0,001 (Kolmogorov-Smirnov) < 0,05 =  $\alpha$ , then  $H_0$  is rejected. So, it can be concluded that the income variable sample data is taken from a population that is not normally distributed. Because the normality assumption is not met, the dependent data will be assumed to be normally distributed for testing purposes. After the normality test is carried out, the data linearity test is then carried out.

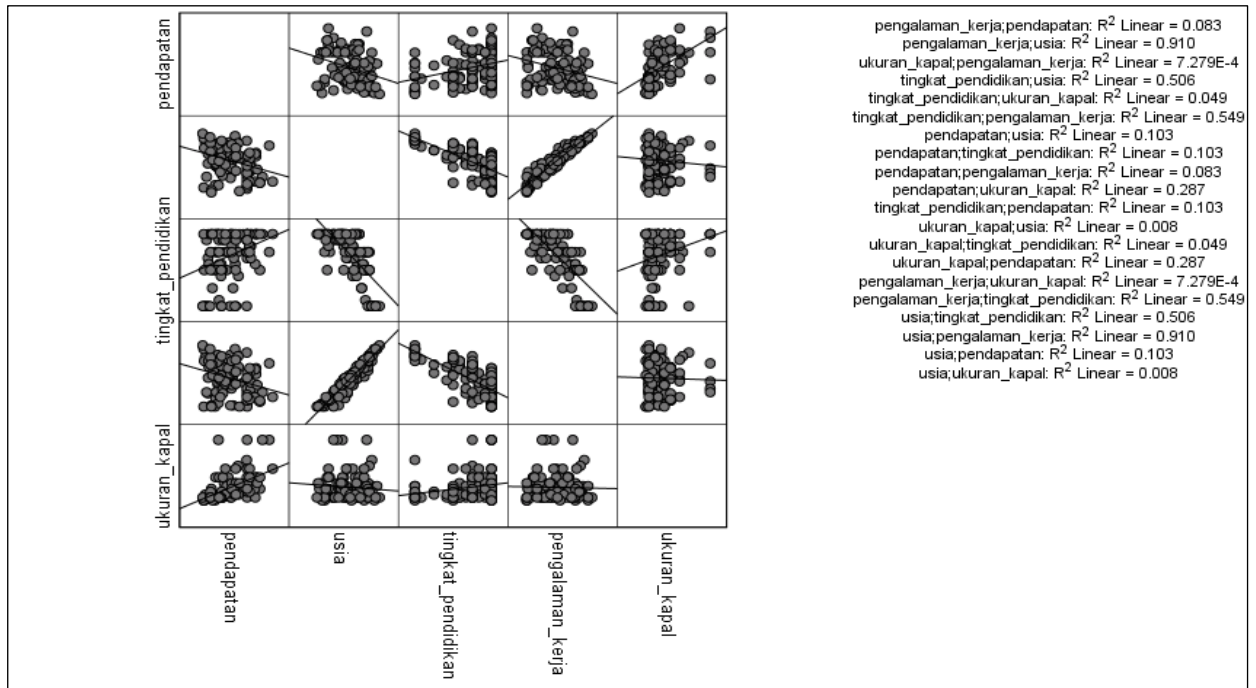


Figure 3. Scatterplot Linearity Test

Source: Primary data output after processing in SPSS, 2023; (Hasiholan, 2023)

The linearity test between income (Y) and age (X<sub>1</sub>) in Figure 3 has a positive or comparable linear relationship, meaning that the greater the value of age, the greater the value of income, with a coefficient of determination of 0,103 indicating that the age variable can explain 10,3% of the variance in the income variable. Based on the *scatterplot* in Figure 3, the linearity test between income (Y) and education level (X<sub>2</sub>) has a positive or comparable linear relationship, meaning that the greater the value of education level, the greater the value of income, with a coefficient of determination of 0,103 indicating that the education level variable can explain 10,3% of the variance in the income variable. Then the linearity test

between income (Y) and work experience (X<sub>3</sub>) has a positive or comparable linear relationship, meaning that the greater the value of work experience, the greater the value of income, with a coefficient of determination of 0,083 showing that the work experience variable can explain 8,3% of the variance in the income variable. While the linearity test between income (Y) and boat size (X<sub>4</sub>) has a positive or comparable linear relationship, meaning that the greater the value of boat size, the greater the value of income, with a coefficient of determination of 0,287 showing that the boat size variable can explain 28,7% of the variance in the income variable.



Table 5. Research Summary Model

Model Summary <sup>b</sup>								
Model R	R Square	Adjusted R Square	Std. Error of the Estimate	Selection Criteria				
				Akaike Information Criterion	Bayesian Prediction Criterion	Mallows' Prediction Criterion	Schwarz Bayesian Criterion	
1	.603 <sup>a</sup>	.364	.337	9105.46272	1828.197	.703	5.000	1841.222

a. Predictors: (Constant), boat\_size, work\_experience, education\_level, age  
 b. Dependent Variable: income

Source: Primary data output after processing in SPSS, 2023; (Hasiholan, 2023).

R Square ( $R^2$ ) or the coefficient of determination measures how far independent variables are in describing the dependent variable. Based on Table 5, the SPSS output table "Model Summary", the value of the coefficient of determination or R Square ( $R^2$ ) is 0,364. This shows that the percentage of influences by boat size, work experience, education level, and age is 36,4%, while other variables outside the study influence the remaining 63,6%.

Table 6. Overall Test (F Test)

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4506941777	4	1126735444	13.590	.000 <sup>b</sup>
	Residual	7876397873	95	82909451.29		
	Total	1.238E+10	99			

a. Dependent Variable: income

b. Predictors: (Constant), boat\_size, work\_experience, education\_level, age

Source: Primary data output after processing in SPSS, 2023; (Hasiholan, 2023).

The Overall Test, or F Test, is performed to see if the independent variables simultaneously affect the dependent variable. Alternatively, used to find out whether a regression model is worth using. Based on Table 6, preliminary hypotheses can be drawn  $H_0$  that the regression model is not feasibly used, and the alternative hypothesis  $H_1$  that the regression model is feasible. This can be seen from the calculated F value of 13,59. At the same time, the

significance value obtained is 0,000, which is smaller than 0,05. So, the multiple regression model in this study is feasible to use. Independent variables, including boat size, work experience, education level, and age, simultaneously influence the dependent variable of fishermen's income in Kamalmuara Urban Village.

Table 7. Partial Test (Test t)

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	20287.883	7974.805		2.544	.013
	age	-129.380	249.030	-.145	-.520	.605
	education_level	10.528	359.593	.004	.029	.977
	work_experience	-104.799	234.081	-.133	-.448	.655
	boat_size	1246.990	211.459	.518	5.897	.000

a. Dependent Variable: income

Source: Primary data output after processing in SPSS, 2023; (Hasiholan, 2023).

A partial test or t-test is performed to test how the effect of each independent variable partially on the dependent variable. A Partial Test for Constants was performed to determine whether the value of the constant is significant to the regression model owned. Taken preliminary hypotheses  $H_0$ , that the constant is not significant to the regression model and the alternative hypothesis  $H_1$  that the constant is significant to the regression model. Based on Table 7, since the values of  $\text{Sig.} = 0,013 < 0,05 = \alpha$ , then  $H_0$  is rejected. So, it can be concluded that the regression model of this study has a significant constant value against the regression model.

A Partial Test for Coefficients was performed to determine whether the coefficient's value is significant to the regression model owned and taken preliminary hypotheses  $H_0$ , that the variable coefficient is not significant to the regression model and the alternative hypothesis  $H_1$  that the variable coefficient is significant to the regression model. Based on Table 7, in the age variable with a significance level ( $\alpha$ ) of 0,05, an age significance value of 0,605 ( $0,605 > 0,05$ ) was obtained, so it can be concluded that age does not affect the income of fishermen in Kamalmuara Urban Village. Age has no significant effect because it can be seen from Table 2 that more fishermen in the age range of 40 – 64 years, of which they are 64 fishermen. While at the age range of 15 – 39 years, there are only 32 fishermen. In addition, fishermen already in the advanced age of its production (65 years and over) are smaller, amounting to only 4 fishermen, because they are not strong enough to go to sea for long. Based on the results of this study, it can be seen that the productive age (aged 15 – 39 years) has a small number of fishermen compared to the age level of unproductive fishermen (aged 40 – 64 years and aged 65 years and over). This means that the number of fishermen in Kamalmuara Urban Village, their age level is the highest at the age level that is no longer productive to do a job. If the age has passed the productive age limit, it will indirectly reduce work productivity or the level of productivity to do work will be reduced. In this case, age indirectly negatively affects the productivity of fishermen households in doing

work to increase the income level of fishermen's households, resulting in poverty in fishing communities. The age factor contributes to determining the level of productivity in doing their work, where the age of one's productivity increases, and the more one's productivity increases in doing one's work (Saptenno, 2022). However, it will also decrease at a certain age due to the factor of physical strength that decreases as well. So that when viewed from the results of this study and the statement of existing theories, it can be assumed that the negative impact caused by age in reducing the income level of fishermen in Kamalmuara Urban Village, i.e. in general fishermen in Kamalmuara Urban Village on average have an unproductive age in creating an increase in income levels for fishing households, thus causing fishermen in Kamalmuara Urban Village to still live in poverty because the income they earn is small compared to the needs they have to meet.

In the variable level of education with a significance level ( $\alpha$ ) of 0,05, a significance value of the level of education of 0,977 ( $0,977 > 0,05$ ) was obtained, so it can be concluded that the level of formal education does not have a significant effect but is positively related to changes in fishermen's income in Kamalmuara Urban Village. Based on the processed results of the study, the variable level of education is inelastic to the income of fishermen in Kamalmuara because the increase in fishermen's income is smaller than the increase in education, which is an independent variable to income which is the dependent variable. Because knowledge and skills about fishing are not taught or learned in formal education does not affect the income level of fishermen. The education variable does not significantly affect fishermen's income because working as a fisherman does not require special skills (Heryansyah *et al.*, 2013). The fishing gear is still simple, so it does not increase catch and income. Education does not have a significant effect but is positively related because the purpose of education is vast because it involves improving the attitudes and behaviours of students that are beneficial for all human life itself, both as individuals and as members of society (Rahman & Awalia, 2016). However,

one benefit cannot be ignored: increasing education will increase income in the future if we see the relationship between education level and income level where the process of education, training and development can improve the quality of life of human resources, which will ensure increased work productivity so that in the end it also guarantees sufficient income and increased welfare so that poverty that occurs in fishing communities can be overcome. Philosophical Sen (2000) theorizes that with good education, everyone has the provision of knowledge and skills, has the choice to get a job, from being more productive so that it can increase income so that education can break the chain of poverty and eliminate social exclusion, to improve the quality of life then and realize community welfare.

In the work experience variable with a significance level ( $\alpha$ ) of 0,05, a work experience significance value of 0,655 ( $0,655 > 0,05$ ) was obtained, so it can be concluded that work experience does not affect the income of fishermen in Kamalmuara Urban Village. This is due to reclamation activities in Kamalmuara due to the development of islands C-D and G, where the area was a fishing ground for sero fishermen and sondong fishermen before the reclamation. Both fishermen with high work experience and fishermen with low work experience find it difficult to find fishing grounds because of the impact of reclamation. Reclamation has resulted in narrowing water areas making it challenging to find fishing grounds for catch fishermen in Jakarta Bay, including fishermen in Kamalmuara Urban Village. Some fishermen (especially Sondong fishermen) must find fishing grounds in other areas farther away. There are even fishermen who cannot go to sea anymore because the fishing area is specifically in certain areas that have been stockpiled. Fishermen own limited facilities and infrastructure for certain areas because it requires many capital costs. Therefore, reclamation has a negative impact on fishermen's catches in Kamalmuara Urban Village. Fishermen's income after reclamation has decreased due to reduced catches and increased expenditure costs for fishing efforts. Of course, this causes the poverty of fishermen

to be higher in Kamalmuara because fishermen's income has decreased due to the decline in catch production. When viewed from a production, fishermen's income after reclamation, total variable costs and profits have decreased due to decreased production and increased fishing costs (Ramadhan *et al.*, 2019).

Meanwhile, in the variable ship size with a significance level ( $\alpha$ ) of 0,05, a significance value of boat size of 0,000 ( $0,000 > 0,05$ ) was obtained, so it can be concluded that the size of the boat affects the income of fishermen in Kamalmuara Urban Village. Because the size of the boat can affect the distance travelled and the number of fish that can be caught and sold by fishermen. Fishermen with larger boats can cover distances to a wider fishing area to catch more fish in one catch and generate higher income than fishermen with smaller boats. The size of the boat affects productivity and catch production, where the larger the size of the boat owned by fishermen, the greater the possibility of catching and getting fish (Limbong *et al.*, 2017). More fish will affect fishermen's production because fishermen will generate higher income. The higher the fishermen's income will reduce the poverty level of fishermen because if fishermen have a significant income, they can meet their daily needs such as food, clothing, health, and education to improve the standard of living of fishermen.

Based on Table 7, multiple linear equations can be made as follows:

$$Y = 20287,883 - 129,380X_1 + 10,528X_2 - 104,799X_3 + 1246,990X_4$$

From the linear equation above, it can be explained as follows: (1) The constant value is 20.287,883, if the age, level of education, work experience and size of the boat are fixed value or constant, then the fisherman's income will be IDR 20.287,883 per once trip in Kamalmuara Urban Village; (2) The value of the age variable regression coefficient is -129,380, if there is an increase in age by 1 year, there will be a decrease in fishermen's income of IDR 129,380 per once trip in Kamalmuara Urban Village assuming that other variables remain constant

(unchanged); (3) The value of the regression coefficient of the education level variable is 10,528, if there is an increase in the level of education by 1 year, there will be an increase in fishermen's income by IDR 10,528 per once trip in Kamalmuara Urban Village assuming that other variables remain constant (unchanged); (4) The value of the regression coefficient of the work experience variable is -104,799, if there is an increase in work experience by 1 year, there will be a decrease in fishermen's income by IDR 104,799 per once trip in Kamalmuara Urban Village assuming that other variables remain constant (unchanged); and (5) The value of the regression coefficient of the boat size variable is 1.246,990, if there is an increase in the size of the boat by 1 GT, there will be an increase in fishermen's income of IDR 1.246,990 per once trip in Kamalmuara Urban Village assuming that other variables remain constant (unchanged).

## Conclusion

The poverty level of fishermen on the North Coast of Jakarta, when compared to the BPS Poverty Line in September 2022, there are 44 fishermen out of 100 fishermen who have been surveyed have incomes below IDR 17.852,00/capita/day, while when compared to the World Bank Poverty Line in PPP 2017, there are 71 fishermen out of 100 fishermen living below the World Bank poverty line because the income earned is less than IDR 32.812,00/capita/day.

Factors that affect fishermen's income on the North Coast of Jakarta that cause poverty are the size of the boat because the size of the boat can affect the distance travelled and the number of fish that can be caught and sold by fishermen. In contrast, factors such as age, education level, and work experience do not affect fishermen's income, so these factors do not significantly affect the poverty of fishermen on the North Coast of Jakarta.

Knowing that the variable size of the boat has a significant effect on the income of fishermen on the North Coast of Jakarta, it is expected that the Government can provide facilities and

infrastructure assistance in the form of fishing gear and boats with larger boat sizes and simplify the application mechanism in obtaining such assistance. So, it is hoped that with the help of fishing gear and this boat can increase catches for fishermen and increase the income and welfare of fishermen so that the poverty of fishermen on the North Coast of Jakarta can be reduced.

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