ANALYSIS OF FACTORS AFFECTING FISHERMAN'S INCOME IN KAMAL MUARA, NORTH JAKARTA CITY

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Abstract

This research aims to determine the effect of operating costs at sea, experience at sea, and length of time at sea on the income of fishermen in the Kamal Muara Village, North Jakarta. The method used in this research is a quantitative method. The reachable population in this study were all fishermen in the Kamal Muara Village Area, North Jakarta, namely a total of 200 fishermen. The 67 fisherman were randomly selected for the sampling, and a questionnaire was used to gather the data. This study use Multiple Regression Analysis as its method of analysis. The results of this study indicate that Operational costs have a positive effect of 0,515 and are significant on fishermen's income. Experience at sea has a positive and significant effect of 0,033 on fishermen's income. Likewise, there is a positive effect of 0.474 and a significant relationship between the length of time at sea and the income of fishermen, which means that each additional length of time at sea will increase the total income of fishermen by 0,474%. Simultaneously, operational costs, experience at sea, and length of time at sea has a positive and significant influence on fishermen's income.

Keywords: Fisherman's Income, Long Time at Sea, Operational Costs, Sailing Experience

1. INTRODUCTION

Indonesia is an archipelagic country which has a wide area with around 17.500 islands. Indonesian people live or live in various areas such as mountainous areas and coastal areas. Communities living in mountainous and coastal areas are very dependent on the natural resources in their area. Indonesia's natural resources are enormous, both on land and at sea. One of the natural resources that has economic potential is marine resources with the area of the country of Indonesia, which is more than 2/3 of the sea or reaching 5,8 million km^2 (580 million ha). Considering that Indonesia is a country with the largest sea area, we can use this potential to increase the income of people who live in coastal areas, namely fishing communities whose economic life is tied to marine resources. especially with fish as the main producer. With such potential marine and fisheries resources, it is not surprising that many Indonesians have livelihoods related to fisheries and marine. As a maritime country, most of Indonesia's coastal residents depend on fisheries to make a living and fulfill their daily lives. Talking about the life of coastal communities will definitely come into contact with fishing communities. According to the Fisheries Law No. 7 of 2016, fishermen are people whose main job is catching fish.

They usually live on the beach, in residential areas close to where they do their activities. In general, people who live on the coast, especially in coastal areas, have a livelihood as fishermen.

Marine and fishery resources in Jakarta waters have considerable potential because they are directly adjacent to the north coast of the Java Sea so that many of them work as fishermen, especially in the North Jakarta area.

Table 1 Total of Fishermen in North Jakarta City 2017 – 2020

Year	Amount	
	Owner	**Worker**
2017	2.210	23.935
2018	2.217	24.035
2019	2.334	24.215
2020	2.784	23.119

Source: North Jakarta Marine and Agriculture Food Security Office

North Jakarta is the largest fish producing area in DKI Jakarta with a total fish produced in 2020 according to the North Jakarta Marine and Agriculture Food Security Service reaching 12.281.289 kg with a value of Rp. 360.948.263.500

Kamal Muara is a sub-district located in Penjaringan District, North Jakarta. Kamal Muara Village, which has an area of 1,053 hectares, includes 3 Residential Units and 19 Neighborhood Units. Based on the Decree of the Governor of DKI Jakarta No. 2561/2003 dated 30 July 2003 concerning the division, unification, determination of boundaries for changing the name of sub-districts in DKI Jakarta and the confirmation of the North Jakarta Mayor, the Kamal Muara Village area is a division and a combination of Kapuk Village (North Jakarta), Tegal Alur Village (West Jakarta), and Kamal Village (West Jakarta). The Kamal Muara area is an area located in the westernmost part of Jakarta Bay and is directly adjacent to the Java Sea, so not a few of them have a livelihood as fishermen. According to residents, settlements in the Kamal Muara area itself have existed since 1953, when this area was still forested. The residents initially farmed rice fields, only then became fishermen. Fishermen in the Kamal Muara area are traditional daily fishermen.

Settlements in Kamal Muara with a population of 69.915 people with the majority of the population working as fishermen living in RW 04 totaling 800 families. In general, fishermen around the coast are small fishermen who go to sea daily. Small fishermen are people whose livelihood is fishing to meet their daily needs. These small fishermen are still traditional fishermen who use small fishing boats with a maximum size of 10 (ten) gross tons (GT) and simple fishing gear that has been used for generations in accordance with local culture and wisdom. Most fishermen in the Indonesian region are still traditional fishermen with socio-cultural characteristics that are not yet conducive to economic progress (Juliantono & Munandar, 2016).

The level of fishermen's income is largely determined by the catch, the number of catches is also reflected in the amount of fishermen's income, which is mostly used for family consumption. Therefore, the extent to which family consumer needs are met is largely determined by the income they receive.

However, the reality is that fishing communities are still synonymous with poverty because they have not been able to increase their income. According to research

conducted by Rahim in (Nurbaya, 2019) that the level of income of fisheries business actors (fishermen) is still below that of other sectors, including agriculture. Fishermen (especially labor fishermen and traditional fishermen) are a group of people who can be classified as the poorest social class among other community groups in the agricultural sector. The fishing community is a group of people who do business to earn income from fishing. The catch of fishermen is a determining factor for the welfare of fishermen. Because if the catch is abundant, then they also receive a lot of income (Ditara, 2016).

The fishermen's residence in Kamal Muara does not reflect a healthy location, as can be seen from the condition of the houses that are not proper and the environment is slum. This shows that the economic condition in Kamal Muara, especially in RW 04, which is nicknamed the fishing village, is still classified as a low economy and shows poverty. Poverty in fishing communities is also caused by the lack of capital and technology owned by fishermen, poor market access and community involvement in processing natural resources. There are other causes: high population growth, social factors such as low levels of education and health, and other reasons such as coastal public facilities and infrastructure (Syahma, 2016).

According to Suryono (2012), that an informant told around 1980-2000 the condition of the waters in the Jakarta Bay was still sufficiently supportive for the fishing process with promising results. In that year, the average fishermen in Kamal Muara each time they went out to sea were able to catch around 50 kg of fish. In addition, the distance that fishermen need to travel is relatively close, about 1 km to sea, fishermen can already get their catch. But that situation began to change, especially after 2000 until now. If previously they could catch around 50 kg every time they went out to sea, but now they can only get around 20 kg on average.

This statement is supported by research conducted by Afdol (2009) that in the 1970s to early 1990s, fishing, especially in the Jakarta Bay, was a promising job because the catches were still abundant. It is very easy for fishermen to get their catch from the sea without having to go far to sea, sometimes the boats used to accommodate their catch are barely sufficient or overloaded. Their catch is sufficient for their daily needs according to their size. Furthermore, Sentosa (2010), in his thesis he also conducted interviews with one of the fishing communities in Kamal Muara who told that in 1995-1997 it could be said that the period when the economic conditions in RW 04 Kamal Muara Village were very good, at that time it was not only for children's schools, for going on pilgrimage easy to do too. But now, going on a trip to eat every day and going to school at the same time is a challenge in and of itself.

Kusuma (2018) said that limited capital is one of the reasons fishermen find it difficult to get out of the cycle of poverty, and a lack of additional skills is also the reason fishermen are less productive when they are not at sea. If they don't work, fishermen will not get income to finance their daily needs and will result in a decrease in the level of welfare of fishing communities. The limited capital of Kamal Muara fishermen can also be seen from the traditional boats used. The size of the boat is still relatively small with a length of about 5-6 m, a width of about 0,5 m, a height or depth of about 0,7 m. and run using 5-10 GT ship engines. Fishermen also need factors that support successful performance in the form of working capital, one of which is fuel oil (BBM). With the increase in the price of fuel oil will cause an increase in the price of fishermen's capital. For example, based on initial observations with Kamal estuary fishermen, they need approximately 10 liters of petrol and 35 liters to go out to sea for 7 hours at a time. It can be said that if fuel prices continue to increase, production costs for fishermen will also

increase. This statement is supported by Prakoso (2013) that without sufficient capital, fishermen would not be able to buy equipment such as boats and fishing gear, would not be able to cover their operational costs, and would be less productive and would not be able to increase production. Hence, fishermen's income has stagnated and will decrease in real terms if one day there is inflation.

Based on initial observations with fishermen in Kamal Muara, the problem found in the field is that it is difficult for fishermen to meet their daily needs because of uncertain catches. The monthly income of the fishermen here is also uncertain. This is because fishermen are very dependent on the available fishing gear which is still simple and only traditional, not to mention the additional operational costs when there is engine damage, boat leakage, and also the price of fuel which includes the fishermen's capital. Conditions like this make the revenue from the catch smaller than the fishermen's expenses or working capital, so fishermen will reduce the quantity of fishing operations for fishing and this will affect their income.

The difficulty for fishermen to meet their daily needs is also due to uncertain catches. Sometimes fishermen get a lot of catches, sometimes none at all. This condition is caused by unfriendly waters, unsafe natural conditions, from fish catches. Given the condition of fishermen who still work to support their families, they have to go to sea to catch fish. Supposedly fishermen catches which are considered difficult to obtain, can be paid in high amounts, but in fact the fishermen's income is not proportional to the price of fish and the struggles carried out by the fishermen themselves.

Fishermen's income which is supported by capital and season will not work well if it is not supported by the use of good fishing gear. This statement is supported by the statement of Putra et al. (2017) that technology has a dominant factor that affects the acquisition of catches. The more modern the fishing gear used, the greater the catch of fishermen, which will affect fishermen's income and increasingly meet the basic needs of the life of fishing communities.

In relation to Kamal Muara fishermen, the fishing gear used is still traditional where the fishing gear used is bagan, sero, archery/shooting (spear fishing), sondong, scoop, hand fishing rod, traps and clam farming. This fishing gear will be adjusted to different targets such as squid, anchovies, shrimp, clams, crabs, lemeut (baby sardines), baronang fish, snapper etc. All of Kamal Muara's fishermen also want to work on improving their fishing gear skills for maximum income. However, this is not always possible for all fishermen. Not all fishermen are affected by the modernization of fishing gear. This is because large capital is required, and fishermen must have large capital.

The list of catch production landed at the TPI location (refers to Fish Auction Place) in North Jakarta City can be seen as follows:

Table 2 Total Fish Production in TPI North Jakarta City

Fish Production at TPI in North Jakarta City 2021

Month	TPI KamalMuara		TPI Kalibaru		TPI Cilincing		TPI Muara Angke	
	Total Production (Kg)	Production Value (Rp)	Total Production (Kg)	Production Value (Rp)	Total Production (Kg)	Production Value (Rp)	Total Production (Kg)	Production Value (Rp)
Janu	238,713	8,832,533,000	954,470	26,791,402,500	185,388	6,289,422,500	2,582,477	106,600,436,150
Feb	264,885	10,586,530,000	777,950	21,179,980,000	158,857	5,403,804,500	1,840,891	64,174,271,450
Mar	286,917	11,334,075,000	979,940	29,720,457,500	217,473	7,140,760,000	2,035,969	72,041,980,100
Apr	280,919	10,922,570,000	883025	24,153,482,500	216,713	7,443,475,000	3,492,024	130,244,350,150
May	287,727	11,483,510,000	915,300	27,705,772,500	198,088	6,636,530,000	3,319,236	129,837,544,850
Jun	316,660	12,761,390,000	862,997	23,898,432,000	176,922	6,111,482,000	3,905,781	171,223,299,800
Jul	290,011	11,215,901,000	954,470	26,791,402,500	223,462	8,392,125,000	3,809,943	179,645,970,600
Aug	316,660	15,189,605,000	862,997	29,367,020,000	176,922	6,866,072,500	2,546,177	96,458,314,600
Sept	290,011	10,955,540,000	954,470	24,698,575,000	223,462	6,341,262,000	3,894,817	167,453,475,600
Oct	465,065	17,396,535,000	1,141,788	27,062,782,500	308,437	9,091,350,000	3,736,100	149,326,335,850
Nov	400,575	14,824,122,000	980,983	24,626,487,000	269,063	8,430,784,500	4,232,528	172,777,200,950
Dec	405,722	17,341,865,000	1,026,345	29,719,442,500	201,752	6,713,977,000	4,431,385	187,420,825,250

Source: North Jakarta Marine and Agriculture Food Security Office

Based on Table 2, it shows that the production of Kamal Mura fishermen's catches is the 2nd lowest catch of the 4 TPIs in the North Jakarta area. The low catch rate refers to the low income of the fishermen. The need for food and clothing is quite high not to mention the maintenance of ships and fishing gear, and fuel for fishing. According to researchers, this income is not enough to meet the daily needs of fishermen's families without additional income from the catch. According to Mankiw (2003) production activities require factors of production such as land, capital and labor. With the existence of these factors of production, the production process activities can be carried out. Sea fish production produced by fishermen is thought to be influenced by capital, labor, and fishing gear technology. Based on the background above, it shows that the factors that affect the level of fishermen's income are necessary and interesting to study. Hence, we are interested in conducting further research with the title "Analysis of Factors Affecting Fishermen's Income in Kamal Muara, North Jakarta City."

2. THEORETICAL BASIS

2.1. Welfare

Welfare is the welfare state according to Bentham in Sukmana (2016) promotes sthe idea that government has a responsibility to ensure the greatest happiness (or welfare) of the greatest number of their citizens. Bentham uses the term 'utility' to describe the concept of happiness or well-being. Based on the principle of utilitarianism that he developed, Bentham argues that the fit that can cause extra happiness is something good.

In relation with welfare, it is very often associated with income levels. Each family will be able to meet their household needs depending on the level of income received. According to Deaton, families with high incomes will fulfill more of their household needs than those with low incomes, so that this means that the family is prosperous. Based on this phenomenon, it can be seen that income can be used as a bridge between the gap between poverty and prosperity (Arimawan & Suwendra, 2022).

The level of household welfare in a region has several indicators that can be used as measurements, including . One of them, according to Sukirno in (Arimawan & Suwendra, 2022) there are three aspects that can be used to measure the level of welfare, namely 1) ability to meet basic needs, 2) level of education, 3) level of health,

Hanum and Safuridar (2018) also mentioned that socio-economic conditions seen from income have an impact on welfare. The income received by each individual or family generally comes from the results of the work he does. Income that is greater than the level of consumption means that the family has a level of welfare, while for those who have a small income it will have an impact on the less prosperous family. Thus, the higher the income a family has and can meet all needs, the more prosperous the family is (Mulia & Saputra, 2020).

2.2. Fisherman Income

In general, one of the indicators to measure people's welfare is income, because income is a person's source of income to meet their daily needs and is very important for the survival and livelihood of a person directly or indirectly. Similarly, Tohar in (Arifini & Mustika, 2013) said that income can also be interpreted as the amount of income, both from individuals and families in the form of money obtained from services every month, or it can also be interpreted as a business success or economic profit which is the total income earned by the business owner after deducting production costs

Income in economics is defined as the result of work in the form of money or other material things that are achieved from the use of wealth or free human services. Meanwhile, household income is the total income of each member of the household in the form of money or goods obtained either in the form of salaries or wages for household businesses or other sources. A person's condition can be measured using the concept of income which shows the total amount of money received by a person or household during a certain period of time (Samuelson, 2002).

Fishermen's income is the difference between revenue and fishing costs that are actually incurred both per trip and per year (Kholis et al., 2020). For fishermen's fishing business income, it is the difference between revenue and fishing costs that are actually incurred by motorized and non-motorized fishermen during the fishing season per trip.

Fishermen's income consists of non-fishermen's income, fishermen's family income, and fishermen's own income (Wahda, 2021)

Non-Fisherman Income (PNN) is income obtained from other working family members such as wives and children. In line with the opinion according to Azizah (2015) in Fitria Amir et al (2019) that the income of other fishermen is sourced from additional income from wives and children.

Fishermen's Family Income (PKN) is the total income of fishermen obtained from Fishermen's Income (PN) and Non-Fishermen's Income, so PKN = PN + PNN.

From the above understanding it can be explained that in fulfilling daily life it is necessary to have business in economic activities that can earn income or income. Income is the result received by everyone through economic activities to be able to meet the needs of life. Income earned by producing goods and services, such as fishermen, can have value and can be measured with sufficient results so that it can meet the needs of daily life. The level of income depends on the selling price of an item and other supporting factors that can affect an activity.

2.3 Fisherman Society

Fishing communities have special characteristics that distinguish them from other community groups, namely characteristics that are formed from life in the ocean which

is very unstable, harsh and full of risks, especially risks originating from natural factors (Nurbaya, 2019).

According to the Ministry of Maritime Affairs and Fisheries, fishermen are people who take part in catching fish from a fishing vessel, either from platforms (sedentary gear or other floating devices) or from the beach. However, people who do work such as making nets, transporting fishing equipment into boats or motor boats, and transporting fish from boats or motor boats are not categorized as fishermen (Munzilir Rohmah et al., 2015).

In fact, fishermen are not a single entity, they consist of several groups which can be categorized into: a) Owner, b) Cultivation Fishermen (Labor or workers), c) Traditional Fishermen, d) Small Fishermen, e) Carry fishermen (transport fishermen).

Bambang Riyanto (2013) said that the fishing community is a group or group of people who work as fishermen, small fishermen, fish breeders and small fish breeders who live around residential fishermen in coastal areas. These fishermen have a typology that is seen from five points of view. Typology itself can be defined as a concept of dividing society into a class or group of objects based on common characteristics and certain criteria. According to Bagong Suyanto (2013), typology of fishermen based on five points of view can be described 1) Based on the mastery of production equipment or fishing gear owned by fishermen, 2) Based on the scale of business capital investment, 3) Based on the level of technology of fishing equipment, 4) Based on labor, 5) Based on length of time went to sea

2.4 Sea Operational Cost

Operational costs are all costs incurred by the company during the company's operations within one year of the accounting period. Operational costs are all commercial costs incurred to support or support sales and administration to obtain revenue, excluding expenses that have been calculated in the cost of goods sold and depreciation (Iry & Rain, 2020).

Part of the capital owned by fishermen is used as production costs or operating costs, namely the provision of production inputs (production facilities), operating costs and other costs in a fishing activity business. The production costs or operating costs of fishermen are usually obtained from groups of rich fishermen or owners of capital, because there is a loan-borrowing relationship as working capital where during the harvest season, the catch (production) of fishermen's fish is used to pay off all debt loans, and the level of fish prices is usually determined by the capital owner (Restu, 2016). According to Iry & Rain (2020), operational costs are divided into three, namely: a) Fixed Costs, b) Variable Costs, c) Semi-Variable Costs,

As according to Herawati (2019), the results of the analysis carried out show that operational costs have a significant influence on the income of fishermen, thereby indicating that the operational costs used determine the size of the income to be earned. According to D.L. Dahen (2016), the greater the cost of production at sea, of course, the greater the chance of getting a catch and increasing the income of fishermen.

2.5 Sea Experince

Work experience is something that has been done by someone before working at an institution or someone who has worked for a long time in an institution. Work experience really helps a person to prepare for a job that may be the same as a new job. Someone who has more work experience will certainly understand better what to do when faced

with a problem. In addition, employees who have more work experience will definitely work faster and do not have to adapt to the tasks being carried out. Work experience is a job or position that has previously been occupied at a certain time (Sunyoto, 2013). According to Lamia (2013) there are also several things to determine whether or not an employee is experienced which also serves as an indicator of work experience, namely: 1) Length of time/working period, 2) Level of knowledge and skills possessed, 3) Mastery of work and equipment.

A worker or employee must have the ability, work knowledge, mood, beliefs, and values at work so that the work carried out can run well and be on target (Restu, 2020). Fishermen's experience at sea also has an impact on fishermen's catches. The experience factor, according to Goddard & Foster (2001), the thing that determines whether or not someone is experienced can be seen from the length of time or work period that a person takes so that he can understand the tasks of a job and has carried out the job properly. The average experience of fishermen in fishing activities with outboard motors is over 13 years. The experience of fishermen in carrying out fishing activities will have an impact on the achievement of marine fish production. The more varied the capital, labor and experience of fishermen in the sea will have an impact on the amount of marine fish production caught by fishermen (Dahen, 2016).

2.6 Length of Time at Sea

The length of time at sea referred to in this study is the amount of working hours used by fishermen in fishing. According to Aryanto (2017) working hours is the number of hours offered by the workforce using units of working hours per day, week or year. According to Kiransari in (Aryanto, 2017) length of time at sea in the life of fishermen in Indonesia is determined by the outpouring of long working hours of fishing operations. According to Masyhuri in Sujarno (2008), there are at least three fishing patterns that are commonly practiced by fishermen: a) fishing patterns for more than one year, b) one-day fishing patterns, c) mid-day fishing patterns

According to Sastrohadiwiryo (2001) length of work does not only concern the number of years of service, but also takes into account the type of work that has been or is frequently encountered. In line with the increase in work, a person's knowledge and skills in work will also increase so as to support efforts to maximize the income earned. Iry & Rain (2020) stated that the longer the fisherman worked, the higher the income from fishing. According to G. Becker (1994) describes the theory of time allocation which reveals that all humans have a duration of time for work and other activities.

Putra (2019) also stated that the length of time at sea or working hours at sea is the amount of time spent by fishermen in carrying out one-day fishing operations at sea which has a positive relationship between working hours at sea and changes in income. The longer fishermen work, the income generated increases so that the length of work is very important in increasing or producing higher fish. The higher the fishermen's working hours at sea, the more fish they can produce and the more fishermen's income (Ariska & Prayitno, 2019).

Based on the theory above, it can be understood that the amount of income is largely determined by the number of working hours used. If a worker wants to earn more income, just increase the hours he works. The more working hours used to work, thus the higher the results or income they receive.

3. RESEARCH METHOD

This study uses quantitative methods. The purpose of this study was to determine the effect of operational costs (X1), fishing experience (X2) and length of time at sea (X3) on Fisherman Income (Y). The research population were fishermen in the Kamal Muara Family Area, North Jakata with a total of 200 fishermen. With a simple random sampling using the slovin formula, as many as 67 fishermen were obtained. Data collection was carried out using an open questionnaire with questions distributed to fishermen with operational definitions as follows:

1. Revenue is the amount of income received from sales. of fish catches measured in rupiah units
2. Operational Costs are the total expenditures that must be incurred to obtain production results and obtain income consisting of fuel costs, transportation costs, labor wages and provisions, which are measured in rupiah units.
3. Work experience is the length of time a fisherman has worked as a fisherman in terms of the length of work he has taken so that he can understand work related to fishing as measured in years.
4. The length of time at sea is the length of time fishermen go to sea to find catches from fishing activities which can be calculated in units of hours

The relationship between the independent and dependent variables can be illustrated in the following constellation diagram:
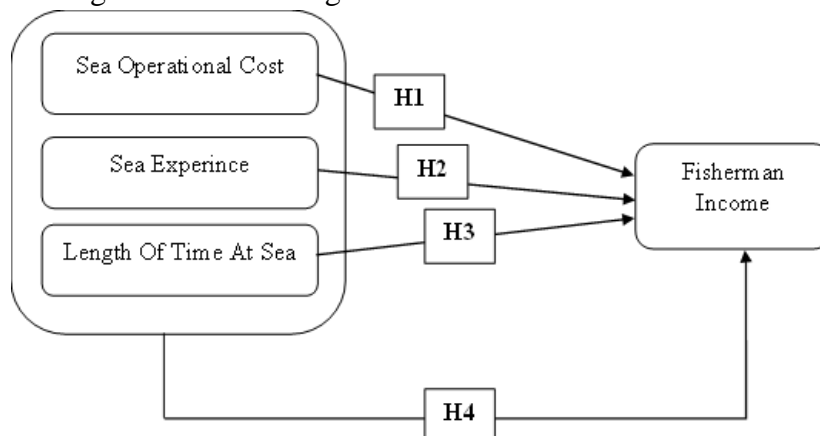

Figure 1. Framework of Thinking

4. RESULT AND DISCUSSION
4.1. Research Result
4.1.1 Respondent Characteristics

In this study, the number of respondents aged 20-30 years with a percentage of 12%, namely 8 fishermen, ages 31-40 years with a percentage of 24%, namely 16 fishermen, ages 41-50 years with a 37%, namely 25 fishermen, 51-60 years with a percentage of 19%, namely 13 fishermen, and ages 60 and over with a percentage of 8%, namely 5 fishermen.

Figure 2 Profile Data of Respondents based on Age
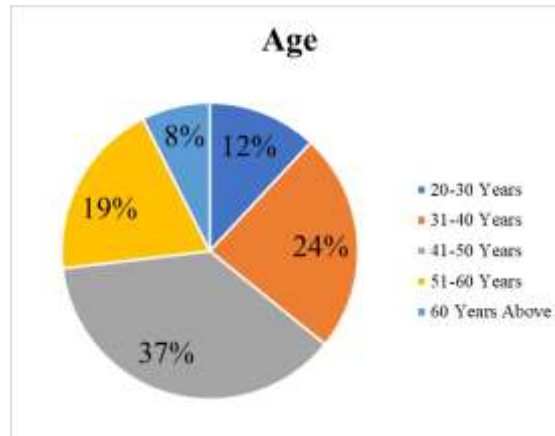
Source: primary data processed by the author, 2022

In this study, the number of respondents with education consisting of Elementary School education level with a percentage of 43%, namely 29 fishermen, Junior High School education level with a percentage of 39%, namely 26 fishermen, High School level with the percentage of 16%, namely 11 fishermen, and uneducated with a percentage of 2%, namely 1 fisherman.

Figure 3 Profile Data of Respondents based on Education
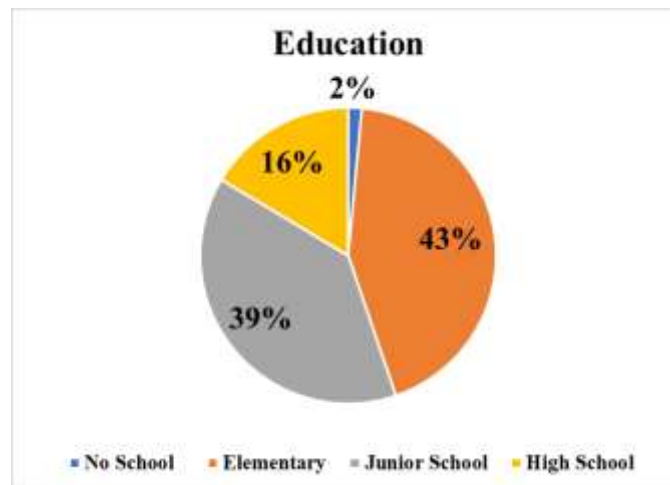
Source: primary data processed by the author, 2022

4.1.2 Statistic Analysis

Table 3 Descriptive Statistics of Sea Operational Cost Variables

Variable	N	Minimum	Maximum	Means	Std. Deviation
Sea Operational Costs	67	300,000	2,000,000	990,000.00	402,270.074
Sea Experience	67	3	50	24,46	10.601
Length of Time at Sea	67	5	13	8.78	2,795
Income	67	1,500,000	9,000,000	4,459,701.49	1,824,086.297

Source: primary data processed by the author, 2022

Based on the data above, it is explained that out of 67 fishing communities in the Kamal Muara Region who were the research samples, there was a minimum result of Rp. 300,000 which shows the lowest operational costs for the respondents, the max result is Rp. 2.000.000 which shows the results of the highest operational costs for going to sea for the respondents, the average amount for operating expenses for going to sea is Rp. 990.000,00 which shows the average operational cost of going to sea obtained by the respondents and a standard deviation of Rp. 402.270.074

Based on the data above, it is explained that of the 67 fishing communities in the Kamal Muara Region who were the research samples, there was a min score of 3 which indicated the lowest respondent's fishing experience, a max score of 50 which indicated the respondent's highest fishing experience, an average score of 24.46 indicating the average sea experience gained by the respondents and a standard deviation of 10.601 which shows the spread of the data from the large median value.

Based on the data above, it is explained that of the 67 fishing communities in the Kamal Muara Region who were the research samples, there was a min score of 5 which indicated the lowest length of fishing for the respondent, a max score of 13 indicating the highest length of fishing for the respondent, an average score of 8.78 indicating the average length of stay at sea obtained by the respondents and the standard deviation of 2.795 which shows the spread of the data from the large median value.

Based on the data above, it is explained that out of 67 fishing communities in the Kamal Muara Region who were the research samples, there was a minimum result of Rp. 1.500.000 which shows the lowest income for the respondent, while maximum result is Rp. 9.000.000 which shows the results of the highest operational costs of the respondents, the average amount of income is Rp. 4.459.701,49 which shows the average fishing income earned by the respondents and a standard deviation of Rp. 1.824.086,297 which shows the results of the distribution of data from the large median value.

4.1.3 Normality Tests

The results of the normality test for operational costs, experience at sea, and length of time at sea show that it can be concluded that the data is normally distributed. The results above show that the normality test of the One Sample Kolmogorov-Smirnov Test shows that the Asympt.Sig (2-tailed) value is 0.092. Thus it can be concluded that the distribution of data is normally distributed because it has a probability of > 0.05.

4.1.4 Multicollinearity Test

The results of the multicollinearity test of operational costs with tolerance (0.681) VIF (1.460), experience at sea with tolerance (0.902) VIF (1.008), and length of time at sea with tolerance (0.676) VIF (1.479) show a VIF value of less than 10 for all independent variables. And the tolerance value is greater than 0.1. Thus it can be concluded that the regression model equation does not contain multicollinearity problems because it has a VIF probability value > 0.1 and a torelance value > 0.1, which means there is no correlation between the independent variables so it is feasible to use for further analysis.

4.1.5 Heteroscedasticity Test

The results of the heteroscedasticity test showed a significant value of variable X1 (operational costs) 0.671. The significant value of variable X2 (sea experience) is 0.291. And the significant value of variable X3 (long time at sea) is 0.996. Based on these data,

it can be concluded that there is no symptom of heteroscedasticity because it has a significant value > 0.05.

4.1.6 Linearity Test

The results of the linearity test on the operational costs variable at sea to income obtained a significance value of 0.941, the experience variable at sea to income obtained a significant value of 0.052, the variable length of time at sea to income obtained a significance value of 0.064. Hence, it can be concluded that the variables of operational costs, experience at sea, and length of time at sea has a relationship with the income variable because it has a significant value > 0.05. Thus, based on the data above it can be clarified that the model used is appropriate because of linearity.

4.1.7 Multiple Regression Analysis

Multiple regression analysis aims to determine whether or not there is an influence of two or more independent variables (X) on the dependent variable (Y). In this study, multiple regression analysis was used using SPSS 25. The results of multiple linear regression can be seen in the form of the table below:

Table 4 Multiple Regression Analysis Results

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	7,050	,255		27,652	,000		
	LN_X1	,515	,020	,663	25,215	,000	,681	1,469
	LN_X2	,033	,014	,050	2,310	,024	,992	1,008
	LN_X3	,474	,028	,446	16,925	,000	,676	1,479

a. Dependent Variable: LN_Y

Source: primary data processed by researchers, 2022

Based on the table above, the regression equation is obtained, namely,

$$Y = 7.050 + 0.515X1 + 0.33X2 + 0.474X3 + e$$

This equation shows that the regression coefficient value of the variable operational costs for fishing (X1) is 0.515, meaning that every time there is an increase in operational costs for going to sea, it will increase fishermen's income by 0.515%. The regression coefficient value of the variable experience of going to sea (X2) is 0.033 meaning that every time there is an increase in experience at sea it will increase the income of fishermen by 0.033%. The regression coefficient value of the length of time at sea (X3) is 0.474, meaning that any increase in length of time at sea will increase fishermen's income by 0.474%.

4.1.8 T Test

The t-statistic value of the operational expenses variable at sea (X1) is 25.215 with a significant level of 0.000. Because the significance value is smaller than alpha, ha is

accepted and Ho is rejected. In other words, the variable operational costs to go to sea (X1) partially has a significant effect on income. The t-statistic value of the operational costs variable at sea (X1) is 25.215 with a significant level of 0.000, the variable experience at sea (X2) is 2.310 with a significant level of 0.024 and the variable length of time at sea (X3) is 16.925 with a significant level of 0.000. Hence, the variables of operating costs at sea (X1), experience at sea (X2), length of time at sea (X3) partially have a significant effect on income.

The value in the t-table is 1.667, while the t-statistic value > table so that it can be concluded that Ha is accepted, which means that there is a partial effect on the operational costs of going to sea, experience at sea and length of time at sea on income.

4.1.9 F Test

Based on the results of the f test, the F-statistic value is 687.324 and the significance value is 0.000 <0.05, then Ho is rejected and Ha is accepted and it can be concluded that the variables of operational costs at sea, experience at sea, and length of time at sea partially have a significant effect on income.

4.1.10 Test Analysis of the Coefficient of Determination (R^2)

Based on the results of the table above, the R^2 value is 0.97 or equal to 96,9%. This means that the influence of operational costs (X1), experience at sea (X2), and length of time at sea (X3) on income (Y) is 96,9% while the other variables that affect the variable income (Y) is 3,1%.

4.2. Discussion
4.2.1. Effect of Fishing Operational Costs on Fishermen's Income

Based on the research results, it is known that the operational costs of going to sea have a positive and significant effect on fishermen's income. The regression coefficient value is 0,515 which means that every additional operational cost going to sea will increase the total income of fishermen by 0,515%.

Operational costs are all commercial costs incurred to support or support sales and administration to obtain revenue, excluding expenses that have been calculated in cost of goods sold and depreciation (Iry & Rain, 2020). Fishermen's operating costs are usually obtained from groups of wealthy fishermen or capital owners, because there is a relationship of borrowing and borrowing money as working capital where during the harvest season, fishing catches are used to pay off all debt loans and the price level of fish is usually determined by the capital owner.

Operational costs are usually in the form of capital or assets, for example the purchase of ship engines, boats, and the capital used in one-time outing activities. The better the boat engine owned by fishermen, the greater the chance of getting lots of fish owned by fishermen, because with an engine in good condition, it will facilitate the fishermen's sailing activities, making it possible to catch more fish.

Dahen (2016)in his research also stated that the greater the production costs of going to sea, of course, the greater the chance of getting a catch and increasing the income of fishermen. In their research, (Iry & Rain, 2020) also stated that operational costs are one of the important factors in a fishing operation. What is meant by operational costs for going to sea in this study include consumption or supplies costs, fuel costs, costs for buying ice cubes, and others. The results of this study indicate that if any increase in operational costs, it will also increase income.

Hence, it can be seen that the increase in operational costs at sea owned by fishermen can increase fishermen's income so that fishermen have a higher ability to increase fuel supplies, supplies supplies, ice block supplies, as well as other unexpected expenses such as repairing ship engines, repairing equipment catch that was damaged during fishing activities, there was damage to the ship so that it was suitable for use at sea and could provide maximum income.

4.2.2 Effect of Sea Experience on Fishermen's Income

Based on the results of the study, it is known that the experience of going to sea has a positive and significant effect on fishermen's income. The regression coefficient value is 0,033 which means that each additional experience at sea will increase the total income of fishermen by 0,033%.

Sea experience really helps a fisherman to prepare for things that might happen when doing work. A fisherman who has more work experience will certainly understand better what to do when facing problems, so that when working, fishermen who have sea experience must already have a way to minimize the problems that occur, so that the fish catches obtained will be even greater because it can avoid the problems that exist. In fishing activities with more experience, fishermen who are more experienced in catching fish will be able to increase their income and profits.

The influence of fishing experience on income was also found in research conducted by Dahen (2016) that the more varied the capital, labor, and experience of fishermen in seawater, the more it will have an impact on the amount of marine fish production caught so that it affects the amount of fishermen's income.

As such, it can be seen that if someone has been working as a fisherman for a long time, both as a boat owner and as a crew member, fishermen have a deeper ability to identify sea conditions, understand how to repair and maintain ships or fishing gear from damage, and have a strategy to produce better in quality and more in quantity, then this will provide an increase in the income of these fishermen

4.2.3 Effect of Length of Time at Sea on Fishermen's Income

Based on the results of the study, it is known that the length of time at sea has a positive and significant effect on fishermen's income. The regression coefficient value is 0,474 which means that each additional length of time at sea will increase the total income of fishermen by 0,474%.

The effect of length of time at sea on income is also proven by Ariska & Prayitno (2019). They mentioned that the longer fishermen work, the income generated will increase, so that the length of work is very important in increasing or producing higher fish. The higher the fishermen's working hours at sea, the more fish they will be able to produce and the more income Narayan will have.

Wiyasa (2017) also argues that worker productivity is also influenced by the amount of hours worked or the length of time to work. In general, offshore fishing which is carried out for a longer time and is farther away from the target area of fishing has more possibilities of obtaining more catches (production) and certainly provides greater income compared to nearshore fishing (Trisnawati et al., 2013).

In addition, according to Ani (2018) that the informal sector does not recognize standard working hours, but they work unlimited working hours. The most important thing for them is to generate higher income regardless of working hours. As is the case

for fishermen where working hours are not a requirement for them to work but in working they are free to choose the hours to start working as well as stop working. Working hours are closely related to a person's income level, the more working hours used, the higher the income he receives.

Fishermen who have worked longer will have a more mature and precise strategy in their work because fishermen with longer working hours will be able to make decisions in every condition and circumstance. In addition, the length of time a fisherman is engaged in his field of work will affect his professionalism, thereby supporting efforts to maximize the income earned.

Thus, it can be seen that in general, offshore fishing which is carried out for a longer time and is farther from the target area of fishing, has more chances of obtaining more catches and will certainly provide greater income compared to fishing close to the sea. the beach, as well as the length of time a fisherman has worked can be an advantage in choosing a strategy and how to do his work, and being able to innovate in every job done so that fishermen know how to get more fish catches every day, so this provides an increase in fishermen's income.

4.2.4 Effect of Sea Operational Costs, Sea Experience, and Length of Time at Sea on Fishermen's Income

Based on the results of the research, it is known that from the results of the F test that has been carried out, operational costs, experience at sea, and length of time at sea have a simultaneous and significant positive effect on fishermen's income. This is evidenced by the results of the F test with a value of 687.324 with a significant value of 0.000.

The simultaneous effect that occurs between operational costs, experience at sea, and length of time at sea on fishermen's income can occur because each variable X has a positive and significant influence on fishermen's income. In other words, operational costs, experience at sea, and length of time at sea are important in influencing the income level of a fisherman.

The simultaneous effect of operating costs, experience at sea, and length of time at sea on fishermen's income is also proven by Dahen (2016) showed that capital, working hours, and experience at sea jointly affect the income of fishermen in the Koto Tangah District, Padang City.

5.   CONCLUSION
Based on the analysis conducted, researchers have concluded that:
1. There is a positive effect of 0,515 and it is significant between the operational costs of going to sea on fishermen's income, which means that every additional operational cost will increase the total income of fishermen by 0,515%.
2. There is a positive effect of 0,033 and a significant relationship between fishing experience and fishermen's income, which means that each additional experience at sea will increase the total income of fishermen by 0,033%.
3. There is a positive effect of 0,474 and a significant relationship between the length of time at sea and the income of fishermen, which means that each additional length of time at sea will increase the total income of fishermen by 0,474%.

4. Simultaneously, operational costs, experience at sea, and length of time at sea has a positive and significant influence on fishermen's income. This was evidenced by a significant value of 0,000.

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