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Factors affecting expenditure and income of small fisherman households: Evidence from Jember, Indonesia

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ABSTRACT

► Research Article

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JEL Classification E31; J43; O11 Small-scale fishermen from Watu Ulo, Jember, Indonesia use very simple fishing gear and small boats use nets. Thus, they receive a low catch and affect their well-being. This study aims to analyze the factors that can affect the income and expenditure of fishers' households. This study interviewed fishermen in Watu Ulo Hamlet, Ambulu District, using simple random sampling. The analytical method in this study used the Two-stage Least Square (2SLS) method to estimate the parameters of the equation. The results showed that the fishing income was influenced by the selling price of the fish and fishing production. Non-fishing income was influenced by total household income and fishermen's education. Husband's work at sea did not affect non-fishing income. Meanwhile, there were two factors that affected fishermen's household expenditures. Food expenditure was influenced by total household income, number of family members, and rice expenditure. Moreover, non-food expenditure was influenced by total household income, the number of schoolchildren, and customs. This study suggests that fishermen need to diversify their income sources into processed goods so that they can be sold in markets or shops. Such effort can increase the income of fisherman households.

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INTRODUCTION

The fisheries and marine sectors are one of the factors that contribute to production in coastal areas because they can increase the economic income of local communities (Voyer et al., 2017). As an archipelagic country, Indonesia has vast coastal areas which are inhabited by about two million fishermen and farmers. Based on data (BPS, 2021), Indonesia's fishery production potential has increased from 807,788.48 tons in 2018 to 816,945.30 tons in 2019 while East Java's fishery production in 2019 was 121,707.10 tons whereas previously in 2018 was only

114,811.20 tons. Jember Regency fishery production in 2020 reached 9,784.90 tons.

Jember Regency has a lot of potential natural resources. This is proven by the fact that Jember Regency has an area of 3,293.34 km², divided into 31 sub-districts. Five of them have coastal areas scattered along Ambulu District. One of the hamlets in Ambulu District is Watu Ulo Hamlet, Sumberejo Village where the majority of the people work as fishermen. The resources of the fishery sector have the potential to be the main driver of the national economy, but currently this potential has not been managed optimally (Arnawa et al., 2017).

There are many types of fishermen, and the traditional ones generally use simple fishing gear to catch fish (Rahim & Hastuti, 2018). According to Gebremedhin et al. (2013), they use simple fishing gear in fishing and boats that do not exceed 5GT (gross tonnage), including outboard motors and motorless boats. The fishing business is carried out by the head of the household with outboard motor support with a power node (PK) which is equipped with modern fishing gear to reach the fishing ground as a fishing area in the Exclusive Economic Zone (Rahim, Hastuti, & Bustanul, 2018). Watu Ulo Hamlet is not quite accessible because it must be reached by land, while the roads are small and no public transportation is available nearby. The people's eating habits depend on the results of the harvest. Usually, people eat tuna everyday. The job of fishermen in Watu Ulo Hamlet is seasonal, causing them to have inconsistent income and be unable to meet their daily traditional needs. Therefore, fishermen are characterized as poor (Etuk et al., 2015). According to Ahdan et al. (2019), poverty in fishing communities is still growing every year. It is necessary to have innovations to empower fishermen to overcome poverty, one of which is increasing fishermen's income through their catches. Excessive exploitation of aquatic resources coerces people to fall into poverty. However, if managed properly, aquatic resources will be able to reduce poverty and increase income (Lynch et al., 2017). An increase in a community's welfare is said to occur if the community is sufficient to meet the basic needs of life. This means that food, clothing, housing, education, health, safety, and so on are available and accessible to every citizen, thereby reducing the number of poor people (Lein & Setiawina, 2018).

The strategy to improve the household life of fishermen in coastal areas through poverty alleviation needs to be done by reducing spending during the fishing season (Susilo et al., 2021). Consumption expenditure of each household is related to maximizing utility in consuming goods and services at prices and income levels (Hastuti et al., 2021), and the need for adaptation of poor farmer households so that it will have an impact on people's livelihoods and food security (Alam et al., 2016).

Several researchers have also studied the behavior of fishermen's households through the economic approach of fishermen's households, including Pramyastanto et al. (2013) and Susanti (2019) who Sujarwo et al., Factors affecting expenditure and income...

analyzed the factors that affect the food security of poor households who work in the marine capture fisheries sub-sector. They analyzed the factors that influence the income and expenditure of the payang jurung fishermen in the Madura Strait and their household economy. Likewise, research by Lein & Setiawina (2018) studied the factors affecting production costs, technology, selling prices, and fish catches on the income of fishermen in Flores Timor Regency. It is supported by research conducted by Firdaus & Rahardian (2015) that one of the efforts to increase household income is by increasing the participation of fishermen's wives and family members in work (Rahim et al., 2018). Based on the previous explanations, it is necessary to conduct a household economic model study that aims to identify and analyze the factors that can affect the income and expenditure of fishermen households in Watu Ulo Hamlet, Sumberejo Village, Ambulu District, Jember Regency.

RESEARCH METHOD

This study was conducted in Watu Ulo Hamlet, Sumberejo, Ambulu, Jember. The determination of the research location was carried out intentionally based on the consideration that Watu Ulo Hamlet is a coastal village in Ambulu District with the largest number of capture fisheries production and the number of small fishing households (<5GT). The criteria for the respondent selection were fishermen with boats <5GT and carried out fishing activities independently without the help of crew members (ABK). The population of small-scale fishermen was 313 small fishermen. The probability sampling technique using simple random sampling was chosen to determine the number of samples as many as 38 small fishermen. This technique was chosen because the population in small-scale fishing households has relatively the same household economic behavior (homogeneous). In the central limit theorem, a relatively homogeneous population is distributed close to normal with the sample size $n \le 30$ (Placeholder2). The data analysis used in this study was the econometrics method. The inferential statistical analysis method was used to analyze the Two-stage Least Square (2SLS) sourced from household economic theory (Adelekan & Omotayo, 2017). The stages of household economic model analysis were specification, identification, and estimation.

Model specification addresses the relationship between following variables:

Marine Production (PM)

$$PM = a0 + a1 BBM + a2 IC + a3 PKM + a4 TBGN + u1$$
(1)

Husband's income from fishing (RRTN)

$$RRTN = b0 + b1 BBM + b2 PM + b3 BOM + u2$$
 (2)

$$RRLN = c0 + c1 PTN - c2 THOK + c3 PN + u3$$
(3)

Food Consumption Expenditure (PRTP)

$$PRTP = d0 + d1 PTN + d2 JAK + d3 PB + u4$$
(4)

Non-Food Consumption Expenditure (PRNP) PRNP = e0 + e1 PTN + e2 JES + e3 AIS + u5(5)

Total Household Expenditure TPR = PRTP + PRNP (6)

Household Surplus TBGN = PTN - TPR (7)

In which PM is Fisherman's fishing production (kg), BBM means fuel price (IDR), PKM is experience at sea (Years), IC is amount of sea ice (bar), TBGN is household surplus (years), RRTN is fishery household income (Rp/year), HJI is selling Price of Fish (Rp); BOM is fishing operational costs (Rp/year), RRLN is marine fuel oil (liters/year), PTN is husband's income from fishing (Rp/year), THOK: Total outpouring of nonsea time (Time); PN is fisherman's education (years), PTN is total income of fisherman's household (Rp/year), PRTP is fisherman's household food expenditure (Rp/year), TBR is total household expenditure (Rp/year), PB is rice expenditure (kg), JAK is number of family members (persons); AIS is mores (Rp/year), JES is number of school children (persons).

The results of model identification show that all structural (behavioral) equations proposed were overidentified. According to Panjaitan et al. (2019), when the identification of structural equation model with order condition and rank condition, so simultaneous equation model is over-identified, and the parameter estimation is carried out using the 2SLS (Two-stage Least Square) method. The data processing of this research used the STATA program. The results of the identification of fisherman household economic models are presented in Table 1.

Table 1. The Identification of Fisherman Household Economic Models

Variable	Κ	G	Μ	K-M	G-1	
Marine Production	17	8	3	11	7	
Income Husband Household	17	8	2	12	7	
Husband Non-sea Income	17	8	3	11	7	
Food Production	17	8	4	10	7	
Non food expenditure	17	8	3	11	7	
Note: Models are over identified						

The fisherman household economic model that has been formulated consists of equations where K=17and G=8 (Table 1). Based on the order condition criteria, it can be concluded that every structural equation contained in the model was over-identified and estimated using 2SLS.

RESULT AND DISCUSSION

Characteristics of Respondent

The characteristics of respondents are in regards of the household conditions of the Watu Ulo, Ambulu, Jember. The characteristics of respondents described in this study included head of household, age, and education.

Table 2. The Characteristics of Respondent

	_	
Description	Frequency	Proportion
		%
Gender		
Female	0	0
Male	38	100
Age		
21-30 years	4	10.5
31-40 years	11	28.9
41-50 years	16	42.1
>50 years	7	18.4
Education		
No completed	21	55.2
Primary school	11	28.9
Junior High	3	7.8
High school	2	5.2
Bachelor	1	2.6

Table 2 shows that the households of the Watu Ulo, Jember Regency with Overview of Respondents based on gender above, of the 38 respondents studied, all of them or the equivalent of 100% are male, and 0 respondents or equal to 0% are female. It can be concluded that the heads of fishing households in Watu Ulo, Sumberejo Village, who were the majority of research respondents are male. This shows that men have the thought of working and providing a living for all household members. The only source of living for the households in Watu Ulo Hamlet is from fishing. While fisherman's work is full of risks, it is done just like that. This is also an argument that fishing is done by men because it has a very high risk. Being a fisherman is not only a livelihood but it is the only way of life. Therefore, in general, these fishermen will pass on the tradition of catching fish to the next generation even though their livelihood is marginal. People in their productive age are more productive and considered to have high enthusiasm for doing a job. Respondents who were heads of households and worked as fishermen were quite dominant, namely at the age of 40-50 years with a total of 16 people or 42.1%. Moreover, minority respondents were heads of households working as fishermen with the age of 21-30 years, as few as 4 respondents or 10.5%. This shows that the age of 40-50 years is a productive age for fishermen to work. According to Bastari et al. (2015), productive age is the age of respondents who are in the range of 16-50 years and non-productive age is in the range of 1 year and 15 years. In the field of fishery, most household heads who feel they are

still strong enough to work also continue to carry out fishing activities at sea, even when it is just helping with their children, relatives, neighbors, or crew members. This is done to meet the needs of household life. The heads of households were dominated by those with no formal education, i.e., 21 out of 38 people. The average education of fishermen was very low. Based on data in the field, since childhood, fishermen's children were often taken to sea by their parents.

Small Fisherman's Household Economic

The results of statistical tests on the economic model of small fishermen households, the coefficient of determination (R2) and probability-F values are shown in Table 3.

Table 3. Statistical Criteria of the Small Fisherman's Household Economic Model.

Variable	R ²	Prob-F
The Marine Production (PM)	0,4019	0,0016
Husband's Income (RRTN)	0,7657	0,0000
Husband Non-sea Income (RRLN)	0,8032	0,0000
Household Food Expenditure (PRTP)	0,4194	0,0003
Household Non-Food Expenditure (PRNP)	0,3112	0,0050

Table 3 shows the five structural equations in the small fisherman household economic model using the value of R2 (coefficient of determination) varying from 0.4019 to 0.7657. The relationship between

Sujarwo et al., Factors affecting expenditure and income...

exogenous variables and endogenous variables are theoretical based, and the causality of the variables also considers the economic criteria; therefore, the sign is very critical. The numbers of the estimation coefficient of the function parameters are the finding of this research, elaborated with the reality in the research location.

Marine Production. The marine production equation was affected by the cost of marine fuel (BBM), the amount of ice (IC), and household surplus (TBGN) (Table 4)

Table 4. Estimate Variable Affecting Marine Production

Variable	Coefficient	t	Sig.
Cost of fuel (BBM)	0.000139	1.39	0.174
Amount of ice (IC)	47630	1.93	0.062
Experience at sea (PKM)	0.33536	2.12	0.042
Household surplus (TBGN)	0.000145	1.15	0.620

The cost of fuel (BBM) at sea had a positive effect on fishermen's production. This means that the greater the expenditure on fuel costs, the greater the opportunity for fishing production. This is because the increase in fuel costs causes the reach of fishing areas to be wider and fishermen do not return home too early, increasing total production. According to Hamzah et al. (2017), the increase in the price of fuel (BBM) has a positive impact on profit for the fishermen in North Galesong District, Takalar, South Sulawesi Province. The farther the fishing ground or fishing areas, the more fuel used by motor boats, proportional to the power capacity of the ship. It is based on the research that stated the greater the cost of fuel at sea, the greater the chance of the catch, because marine fuel can increase the number of fish caught by fishermen. Rizal et al. (2021) revealed that generally, the distance of fishermen to the fishing ground area is getting further away, not getting closer, so the amount of marine fuel needed is increasing. However, the cost of marine fuel did not have a significant effect at the level of 5-15% on marine production. Based on the field data, fishermen often had a shortage of diesel fuel supply. Besides, the distance between the fuel station and fishermen was quite far so fishermen often bought retail fuel at a higher price. The amount of ice had a positive and significant effect on marine production. The more the amount of ice used for fishing, the more fish were caught at sea. The increase in the use of ice increased the catch of fishermen. Ice cubes are important to keep the freshness of the fish caught so that the quality and quantity of fish do not

decrease. The use of ice is carried out from when the fish is caught until it lands to maintain the freshness and the quality of the caught fish. The experience of fishermen had a positive and significant effect on fish production. This means that if work experience increases by 1 year, fish production will increase. This statement is confirmed by Chowdhury et al. (2014) that a person's productivity is influenced by the fishing experience of a fisherman. The longer the experience at sea, the more production at sea, because fishermen already have expertise in catching fish. Besides that, fishing experience also affected the average amount of income earned. If the work experience increases, the income from the catch will increase. The level of work experience can affect the amount of income received by fishermen in landing operations (Yasrizal, 2018). TBGN or fisherman household surplus had a positive effect on fish production results. This suggests that the increased household surplus will be used to increase catch production. Based on the theory that there is excess household income, most of it is used for marine production activities such as adding assets by buying new machines and boats. The results of research conducted by (Yasrizal, 2018) stated that one of the factors that increase production at sea is the number of ships. The difference between motor boats <5GT and >5GT will have an impact on the distance traveled to the fishing area (Halim et al., 2019). However, the household surplus did not have a significant effect at the level of 5-15% on marine production. Based on the results in the field, if there was a household surplus, fishermen tended to use the

excess income to pay debts or installments, saved it in the form of gold, paid the children's education fees, and others. According to Budiarti et al. (2021), the remaining income of fishermen is used to pay debts to moneylenders during the lean season (bad weather) or there are big waves and strong winds because fishermen cannot go to sea to catch fish.

Husbands Income. The husband's income from fishing was affected by the selling price of fish (BBM), fishing production (PM), and fishing operational costs (BOM) (Table 5).

The selling price of fish had a positive and significant effect on fishermen's income. This means that the more fish caught at sea, the greater the income of fishermen at sea (Supriyadi & Athon, 2020). The main problem often found by fishermen in East Flores Regency is that the selling price of fish will affect their income. If the selling price of fish is high,

income will increase. Whereas, the selling price of fish depends on the season and type of fish. Based on field data, the commodities often caught were tuna, lemuru, and layur fish.

Table 5. Estimate Variable Affecting Husbands' Income

Variable	Coefficient	t	Sig.
Price of fish (HJI)	2417.696	2.81	0.008
Fishing production (PM)	15.91825	6.57	0.000
Operational costs (BOM)	1535956	-0.86	0.395

Mitra et al. (2021) stated that the size of the fish determines the market price of fish. If the size of the fish is larger, the selling price of the fish will be high, and the income will be large as well. Therefore, the quality of fish must be maintained by such means as processing, drying, and salting, considering that if the quality of fish is good, it will add value to the fish. Thus, it affects the high selling price of fish species and the elasticity of demand prices (Kruijssen et al., 2020). Fishing production had a positive and significant impact on fishermen's fishing income. This shows that the greater the production at sea, the income of fishermen at sea will be even greater. Based on data in the field, fishermen caught not only fish, but also baby lobster. Baby lobster is a better commodity even though the action is prohibited by the government (illegal fishing). Fishermen hunted baby lobsters because the selling price in the market was very high, reaching IDR 40,000 for one baby lobster, and every day they could catch hundreds of them. The use of fishing gear for baby lobster was very environmentally friendly, by using coconut skin (ijuk), but if this practice is continued, it will threaten the species to extinction and bring damage to environmental sustainability. In line with research conducted by Maskun & Ilmar (2020), the cultivation of baby lobster is very minimal because food in the form of pelagic fish is difficult to find, and if it is cultivated, it can reduce the added value obtained by fishermen. Catching baby lobsters is prohibited because Indonesia has entered the category of the Fisheries Management Area of the Republic of Indonesia (FMA-NRI) 712 So 4 FMA-RNI Full Exploited and 7 FMA-RNI in the Over-Exploited category.

The operating costs of fishing had a negative and insignificant effect on fishing income. This shows that the greater the operational costs at sea, the less income from fishing obtained. Operational costs at sea consisted of the cost of fuel (BBM), ice cubes, and eating and drinking such as coffee and tea. This finding supports research by Supriyadi & Efani (2020) that the operational costs of fishing harm fishermen's income. An increase in operating expenses will reduce income, leading to the inefficiency of fishermen's performance and losses in the business activities (Jumirin & Lubis, 2018).

Husband's Non-sea Income. The husband's non-fishing income was affected by total household income (PTN) and husband's outpouring of work at sea (HOK) and Fisherman's Education (PN) (Table 6).

Table 6. Estimate Variable Affecting Husband's Nonsea Income

Variable	Coefficient	t	Sig.
Total income (PTN)	0.802338	11.76	0.000
Husband's outpouring (HOK)	-16343.4	-1.21	0.234
Education (PN)	462281	1.78	0.084

The total income of fishermen's households had a positive and significant effect on non-fishery income. This means that the total household income increases as a result of the increase in non-fishing income. This shows that non-fishing income is one of the variables that make up the total income from fishing. Supriyadi & Efani (2020) stated the source of total household income is the sum of the income of fishing and nonfishing households including husbands. The husband's labor at sea had a negative and insignificant effect on non-fishing income. This means that if the husband's work at sea increases, the income of non-fishing husbands will decrease. This shows that the variable of the husband's work outpouring at sea is inversely proportional to the income of non-fishing husbands. This is in line with research of Supriyadi & Efani (2020) that the husband's outpouring of work at sea has a negative sign on the income of the husband at sea where the change in the variable of the husband's work at sea is the income of the husband at sea.

Husband's education had a positive and significant effect on non-fishing income. This shows that an increase in 1 year of a husband's education at sea will increase the income of non-fishing husbands. Based on the results in the field, there were two types of work: formal and informal. Formal education requires a high diploma and informal education does not require a high diploma. Most of the respondents had informal jobs like parking attendants, shopkeepers, construction workers, grocery workers, and shopkeepers on the beach. Turcinkova & Stávková (2012) stated that a household with a higher education level will be in a better situation than the Sujarwo et al., Factors affecting expenditure and income...

household category with a lower education level. Meanwhile, research conducted by Ramadhona (2021) showed that fishermen's low education is caused by accessibility, facilities, infrastructure, and cost constraints. However, the main job as a fisherman only requires non-formal education which includes skills, creativity, fishing experience, and suitable time for fishermen.

Household Food Expenditure. The food consumption expenditure in this study consisted of total household income (PTN), husband's work outflow at sea (JAK) and rice expenditure (PB) (Table 7).

Table 7. Estimate Variable Affecting Household Food Expenditure

Coefficient	t	Sig.
.0096487	0.32	0.754
857408.6	3.10	0.004
1.246827	4.59	0.000
	Coefficient .0096487 857408.6 1.246827	Coefficientt.00964870.32857408.63.101.2468274.59

Total income had a positive effect on food expenditure. This shows that the greater the total income of fishermen's households, the greater the allocation of income to meet the needs of food consumption. However, total income did not have a significant effect at the 5-10% level on food expenditure. Based on field data, the increase in fishermen's household income on food consumption expenditure did not make fishing households consume food excessively, meaning that fishermen's household dishes are quite simple, such as rice, fish, and vegetables. They consumed substitutes for rice and fish which were obtained from the sea, not from purchases.

According to Yolandika et al. (2021), most of the income received by fishermen is used for food consumption and daily needs. They assumed that there were many other expenses to meet their needs such as paying installments/debts, buying nets, etc. Donkoh et al. (2014) stated that if household income increases, the percentage of food spending is smaller because most of it goes into non-food or other nonessential goods. Then, the number of family members had a positive and significant effect on food consumption expenditure. This means that the increase in household size per unit (person) affects large food consumption expenditures. Based on Keynes' theory, as the population increases, the quantity demand of goods increases. This research confirms the statement by Min et al. (2019) that increasing the size of family members will increase

food expenditure. Households tend to increase their consumption of food such as grains, meat, goat, and fruits. Meanwhile, according to Faradina et al. (2018), the number of family members affects the allocation of household expenditures. A bigger number of household members requires additional food intake which of course costs money. Rice expenditure had a positive effect on food consumption expenditure. This shows that the more rice consumption costs, the more food consumption expenditure. Households with an older age tend to consume more rice than households with younger age. In Upazila, Bangladesh, people consuming rice had increased higher in the last 7 days in 2021, so adopting rice will tend to experience an increase in profits (Bairagi et al., 2021).

Household Non-Food Expenditure. The nonfood consumption expenditure in this study was affected by total household income (PTN), Number of School Children (JES), and Customs and Tradition (AIS) (Table 8).

Table 8. Estimate Variable Affecting Household Non-Food Expenditure

Variable	Coefficient	t	Sig.
Total income (PTN)	0.0644204	2.20	0.034
Number of School Children (JES)	774042.3	2.84	0.008
Customs and Tradition (AIS)	1.67382	2.14	0.039

The total income of fishermen's households had a positive and significant effect on non-food consumption expenditures of fishermen's households. This means that the more total income, the more nonfood expenditures. Based on field data, fishery income included fishing activities and non-fishing jobs such as fishing gear sellers, net maintenance workers, construction workers, shopkeepers, grocery stores, parking attendants, and fish service deliverymen. Most of the people with surplus income during the fishing season were mostly used to buying gold, but during the lean season, they sold it to fulfill their needs or pay their debts. Massaid et al. (2019) argued that higher income means a greater non-food expenditure, thus reflecting a decrease in poverty levels. If the non-food per capita expenditure is equal to or more than 0.47 million rupiahs, an increase of one million rupiahs of non-food per capita expenditure can reduce the percentage of poverty in Indonesia by 68.71%.

The number of school children had a positive and significant effect on non-food expenditure. This means that the greater the number of school children, the greater the non-food expenditure. Based on data in the field, spending on education costs was relatively high even though the families received operational funding assistance from schools. Fisherman households still bore educational costs such as purchasing student worksheets and paying the rest of tuition fees. The average levels of education of fishermen's children were elementary, junior high, and high school. This supports the opinion by Suprivadi & Efani (2020) that the relationship between the number of school children and non-food consumption expenditure has a complementary relationship which is indicated by a (positive) sign. Jannah et al. (2021) stated that families with a larger number of school children will make the expenditure allocated for education even greater. Fishermen have a view to financing the children of fishermen to a higher level (Purwanti, 2010). The traditional ritual of petik laut had a positive and significant effect on non-food expenditure. This means that increasing customs in the form of sea alms will affect non-food expenditures. Based on the data in the field, it is clear that the community respected the existence of *petik laut* which is carried out at the beginning of every syuro month as a form of gratitude that they had been given abundant results. Isnaeni (2020) stated sea alms in Java is a tradition that must be carried out by fishermen as a form of gratitude, blessing, and salvation from God Almighty. Fishermen carry out sea alms rituals and offerings which show that fishermen have a high work ethic in carrying out fishing activities. Although the work ethic is acknowledged, fishermen tend to be pessimistic, wasteful, consumptive, and not confident (Yoke & Chan, 2018).

Research Implication

The government always pays great attention to the small-scale fishermen as a group of people who are poor, marginalized, and vulnerable to social and economic shocks, thus requiring some level of social and economic support and protection (Halim et al., 2019) by Article 34 (2) of the Constitution that the Indonesian government is obliged to provide support and protection to the poor and underprivileged such as fishermen in order to be able to carry out sustainable fisheries management. Meanwhile, in Bangladesh, government emphasizes increasing blue growth and achieving sustainable development goals. The Bangladeshi government has fishery prospects and challenges to strengthening the national economy

and the need for international standards. They carry out environmentally friendly programs by establishing fish sanctuaries, improving community biological management water bodies, ensuring access of poor fishermen to fish farming, improving open water capture fisheries, promoting the private sector, and improving marketing system (SDGs) (Shamsuzzaman et al., 2020)

The income obtained by fishermen in Jember Regency, especially in the research location, comes from fishing results plus income outside of fisheries which has an impact on spending on meeting family food needs. The income of fishermen is based on the size of the volume of catch and some other factors that is the selling price of fish, technology, and the catch of fish. Needs are said to be sufficient if there is food availability, food security, food access, and food quality in a sustainable manner (Bene et al., 2016). The fisherman's dietary preferences have a high energy density in fish consumption compared to vegetable consumption. The fish itself is obtained from the catch at sea so there is no need to spend a lot of food (Kim & Seung, 2020).

The contribution of fishery to household income in the Watu Ulo Hamlet, Ambulu District, Jember Regency, is still very dominant. This is because most fishermen who live in rural areas depend on fisheries for their livelihood. The amount of wages earned by fishermen is formed as a result of the high risk of the catch and the price of fish at that time. The number of wages received will affect the level of fishermen's welfare (Hendrik et al., 2020). Marimuthu et al. (2015) explained that traditional fishermen have the only source of income since they do not often participate in activities not related to fisheries, meaning that the source of income is from fisheries only. The level of fulfillment of family consumption needs and other needs is largely determined by the income received. This condition affects the welfare level of labor fishermen (Lubis et al., 2021).

Fishermen in Jember Regency, especially in Watu Ulo Hamlet, are not only looking for fish, but most of them are looking for baby lobster. Whereas, the Ministry of Maritime and Fisheries Affairs has issued a policy that expressly states the prohibition of catching lobsters that are laying eggs and lobster weighing less than 200 grams, or categorized as baby lobster. Thus, the issued policies need to be implemented to maintain the existence and availability of the lobster resource population which is increasingly threatened, even though the baby lobster can increase the income of fishermen (Maskun et al., 2020). They move from one (Taufique, 1997) body of water to another to increase income. Thus, when income in a particular body of water declines the fishermen move to one where the expected income is higher. In addition, it shows that the income from fishermen is generally not low because it is determined by the experience of fishermen, the number of fishing assets they have, and by the quality of the water they access.

Based on Law No.16/1964 Article 3, paragraph 1, which explains that the Government of Indonesia regulates the legal basis for fishery product sharing as stated in this law, but it is in fact not yet fully upheld. According to Aida et al. (2020), the pattern of the patron-client relationship as a tool of exploitation subtly occurs in a poor economic condition where fishermen are often forced to borrow money and other daily necessities from traders or collectors and even moneylenders. As a result, the borrower has an obligation to the owner or merchant. The obligation includes the need to sell to traders or skippers. It needs to be avoided because it makes life worse, as the families get stuck with a wasteful and excessive culture. Therefore, it is recommended that the government provides support to local institutions to become a forum for fishermen in rural areas to empower them and improve the welfare of the fishing community (Wekke & Cahaya, 2015).

CONCLUSION AND SUGGESTION

The factors that affect the income and expenditure are presented as follows. Fishing income is influenced by the selling price of fish and fishing production. Operational costs do not affect fishing income. Nonfishing income is influenced by total household income and fishermen's education, while husband's work at sea does not affect non-fishing income. Food expenditure which is influenced by total household income, number of family members, and rice expenditure. Meanwhile, non-food expenditure is influenced by total household income, number of schoolchildren, and customs.

Suggestions that can be conveyed in the findings of this study are for the households to empower catch management to maximize catch potential and to increase the added value of local fishery products and have an impact on increasing the household income. Furthermore, to encourage an increase in the fishermen's income, it is expected that Jember Government especially its Fishery Department provide guidance and give more attention and support to the welfare of fishing households and development of technological improvement capability in fishing with the right technology by increasing the catch to have an impact on increasing the income and reducing the expense of the household.

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