

ANALYSIS OF FACTORS AFFECTING THE INCOME OF FISHERMEN IN THE COASTAL DISTRICT OF BIREM BAYEUN, EAST ACEH DISTRICT

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Abstract

Birem Bayeun is one of the sub-districts in East Aceh Regency with large capture fisheries production. This research aims to determine the influence of skills, knowledge, attitudes, and work experience on fishermen's income in Pesisir, Birem Bayeun District, and East Aceh Regency. This research uses a causal design. The sampling technique uses the Quota Sampling method. The Number of samples in this study was 42 fishermen. The data used in this research are primary and secondary data with a questionnaire measurement scale using a Likert scale. The analytical tool used is the multiple linear regression method. In conclusion, knowledge and attitudes significantly influence income, and skills and work experience do not affect fishermen's income.

Keywords: Skills; Knowledge; Work Experience; Income; Attitude

INTRODUCTION

East Aceh Regency is one of the districts in Aceh Province with a stretch of coast in the Malacca Strait, a coastline of 1,648 km, and relatively high fisheries potential (Heryansyah et al., 2013). Birem Bayeun is one of the sub-districts in East Aceh Regency with large capture fisheries production. The capture fisheries production in 2019 was massive, namely 262.79 tons, and decreased in 2020 to 26.32 tons (East Aceh District Fisheries Service, 2022). Judging from the production of capture fisheries in Birem Bayeun District, it has decreased, which means that the level of fishermen's income has also reduced because production is related to pay. If production increases, payment will also increase, but in reality, what is seen from the social structure of fishermen's lives in Birem Bayeun District is not yet reflected. Better income level.

Improving the population's welfare can be done if the population's income increases sufficiently to meet the basic needs of life. This can be interpreted as meaning that the requirements for food, clothing, housing, health, education, and so on are available and easily accessible to every resident so that, in turn, the number of poor people decreases. Fisheries is one sector that is expected to be able to support improving the welfare of the Indonesian people. The fisheries subsector can play a role in the recovery and growth of the Indonesian economy because of the large number and diversity of potential fish resources.

The problem often faced by fishermen, especially Indonesian fishermen, is a lack of knowledge and skills. This can impact fishermen's inability to access technology and information, their lack of mastery of safety and fishing competencies, and their ability to handle fish catches. On the other hand, fishermen's low education and skills can result in

humble awareness of the importance of preserving the environment. Hence, cases of irresponsible fishing often occur, for example, using explosives, chemicals, electricity, or illegal fishing gear, which results in low levels of safety arrest (Amin et al., 2018).

Apart from that, attitude is also one thing that hinders fishermen's improvement. According to Rahayu (2017), a positive attitude of fishermen will comply with the applicable rules, while a negative attitude of fishermen will give rise to conflict and rejection of an object. Work experience or knowledge of marine product fishing techniques is also essential, generally obtained from generation to generation from their parents or predecessors based on experience. With increasing age, there will always be an increase in work experience.

Based on the background of the writing that has been described, the question is what variables influence fishermen's income in the Coastal District of Birem Bayeun, East Aceh Regency.

RESEARCH METHODS

Research Location and Time

The time of the research was carried out in February 2023. This research was carried out purposively in the Coastal District of Birem Bayeun, East Aceh Regency, to be precise, in four villages, namely Birem Rayeuk Village, Keude Birem Village, Paya Peulawi Village, and Bayeun Village for this reason. It is an area that produces capture fisheries located in the Coastal District of Birem Bayeun, so most of the people living there work as fishermen.

Data Processing and Analysis Methods

This research uses a causal research design. The data type used is primary data using a questionnaire instrument distributed to respondents. This research aims to determine the factors influencing fishermen's income in the Coastal District of Birem Bayeun, East Aceh Regency. The research method used in this research is a descriptive method with a survey approach.

The population in this research is fishermen who live/live in Pesisir, Birem Bayeun District, and East Aceh Regency, namely in the four research location villages, totaling 837 fishermen according to the results of interviews at each village office. The Number of samples used was 42 respondents from a known population size, referring to the Slovin formula, which determines the minimum sample size required from a population to obtain a sample that can describe and represent population data. The sampling technique in this research uses the Simple Random Sampling method or is said to be a simple random sample because the sampling of sample members from the population is carried out randomly without paying attention to the existing strata in the population of fishermen.

The methods for collecting data in this research were carried out in several ways, including 1). Primary data is obtained directly from fishermen on the coast of Birem Bayeun District through observation, interviews, and questionnaires. 2). Secondary data is obtained from agencies related to this research, such as the Village Head's Office, Central Statistics Agency (BPS), books, journals, internet media, and other supporting sources. This research instrument uses a questionnaire with structured

questions/statements and closed-answer options using a measurement scale, namely the Likert Scale.

To determine the amount of fishermen's income in the Coastal District of Birem Bayeun, East Aceh Regency, according to Soekartawi (2003), is calculated by determining total revenue and costs using the following formula:

- a. To assess the acceptance of fishermen in the Coastal District of Birem Bayeun, East Aceh Regency, the procedure is used:

$$\text{Total Revenue (TR)} = P \times Q$$

Information:

TR = Total Revenue/Receipt (IDR/Year)

P = Price/Price (IDR)

Q = Number of catches sold (Kg/Year)

- b. To find out the total production costs of fishermen in Pesisir, Birem Bayeun District, East Aceh Regency, the formula is used:

$$\text{Total Cost (TC)} = FC + VC$$

Information:

TC = Total Cost/Total Cost (IDR /Year)

FC = Fixed Cost/Fixed Cost (IDR /Year)

VC = Variable Cost (IDR /Year).

- c. To find out the total income of fishermen in the Coastal District of Birem Bayeun, East Aceh Regency, the formula is used:

$$\Pi = TR - TC$$

Information:

Π = Total Income (IDR /Year)

TR = Total Revenue/Total receipts (IDR /Year)

TC = Total Cost/Total operational costs incurred (IDR /Year)

Based on the type of data and analysis, this research is a type of quantitative research, that is, to test hypotheses and analyze research data that is relationship/influence; it can be analyzed using the Multiple Linear Regression method using the SPSS 20 program. The multiple linear regression model in this research is:

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

Information:

Y: Fisherman's income (IDR /year)

a: Constant

b1: Skill variable regression coefficient (X_1)

b2: Knowledge variable regression coefficient (X_2)

b3: Regression coefficient for attitude variables (X_3)

b4: Regression coefficient for the work experience variable (X_4)

e: Standard error

X1: Skill (Score)

X2: Knowledge (Score)

X3: Attitude (Score)

X4: Work Experience (Years)

RESULTS AND DISCUSSION

Characteristics of Respondents Based on Age

The characteristics of respondents based on age range can be seen in the table below.

Table 1. Distribution of Respondent Characteristics Based on Age

Age	Number of Respondents	Percentage (%)
22-32	7	17
33-42	13	31
43-52	11	26
53-62	7	17
>63	4	9
Amount	42	100%

Source: Primary Data (processed), 2023.

Respondents based on age among fishermen in Pesisir, Birem Bayeun District, East Aceh Regency were dominated by respondents with an age range of 33-42 years, namely 13 fishermen (31%), and respondents who were at least > 63 years old, namely four fishermen (9%). The high number of fishermen with an age range of 33-42 years proves this age is productive for fishermen in the coastal district of Birem Bayeun, East Aceh Regency.

The productive age of fishermen ranges from 15-64 years, which is ideal for workers. Effective period, in general, as you get older, your income will increase, depending on your work type. A person's physical strength to carry out activities is closely related to age because if a person's age has passed the productive period, their physical strength decreases, so their productivity decreases, and their income decreases (Putri & Setiawina, 2013).

Characteristics of Respondents Based on Education Level

The research respondents based on education level can be seen in the table below.

Table 2. Distribution of Respondent Characteristics Based on Education Level

Level of Education	Number of Respondents	Percentage (%)
Elementary School	31	74
Junior High School	6	14
Senior High School	5	12
Amount	42	100%

Source: Primary Data (processed), 2023.

Respondents with a recent education history of elementary school had the highest number of respondents, namely 31 fishermen (74%). In contrast, respondents with a history of education as recent as junior high school (14%) and respondents with a history of education as current as high school had the lowest number, namely five fishermen (12%). The characteristics of fishermen based on education level are dominated by respondents with a recent educational history, namely elementary school. Based on the results of research conducted, the low level of education is caused by economic factors.

The level of education influences a person's skills, behavior, and attitudes, and this should be related to the income level of a fisherman. Human capital theory states that a person can increase his income through increasing education. This means that longer a fisherman's education will enable the fisherman to earn a higher income because if someone has a higher level of education, they tend to be known more and have broader insight.

Characteristics of Respondents Based on Number of Dependents

The research respondents based on the number of dependents can be seen in the table below.

Table 3. Distribution of Respondent Characteristics Number of Dependents

Number of Dependents (people)	Number of Respondents	Percentage (%)
0-2	15	36
3-5	22	52
6-8	5	12
Amount	42	100%

Source: Primary Data (processed), 2023.

The distribution of respondents based on the number of family dependents in Birem Bayeun District shows that the Number of dependents 0-2 people is 15 people (36%), the Number of dependents 3-5 people is 22 people (52%), while the Number of dependents 6-8 people is five people (12%). The Number of family dependents will influence how much you spend each day. According to Halim (2017), the greater the number of dependents in a person's family, the greater the burden of meeting their family's needs. The Number of dependents will influence the business undertaken because the more family members there are, the more active a person will be in earning income.

Characteristics of Respondents Based on Work Experience

Respondents based on fishermen's work experience in Pesisir, Birem Bayeun District, East Aceh Regency can be seen in the table below:

Table 4. Distribution of Respondent Characteristics Based on Work Experience

Sea Experience (Years)	Number of Respondents	Percentage (%)
1-10	13	31
11-20	16	38
21-30	5	12
31-40	7	17
>40	1	2
Amount	42	100%

Source: Primary Data (processed), 2023.

There were 16 respondents with work experience of 11-20 years (38%) and one respondent with work experience of > 40 years (2%). Having experience can help fishermen know the right place to place fishing equipment, such as fishing nets, to produce large catches. Also, experience is significant because, with experience, fishermen can know which locations have lots of results and which don't.

Income Analysis Results

From the results of the income analysis in this research, the results of the average income/year of fishermen in Pesisir, Birem Bayeun District, East Aceh Regency are as follows:

Table 5. Total Operational Costs for Fishermen on the Coast of Birem Bayeun District, East Aceh Regency, 2023.

No	Description	Amount (IDR/Year)	Average (IDR/Year)
1	Fixed Cost		
	a. Tool Depreciation	88.072.948	2.096.975
2	Variable Cost		
	a. Sea Travel Cost		
	- Diesel Cost	216.384.000	5.152.000
	- Consumption Cost	138.240.000	3.291.428
	Total	442.696.948	10.540.404

Source: Primary Data (processed), 2023.

Based on the table above, the total operational costs, which include fixed costs and variable costs incurred during the working process of going to sea in Pesisir, Birem Bayeun District, East Aceh Regency, with total expenses incurred each year are IDR 442,696,948/year with an average of IDR. 10,540,404/Year. Equipment depreciation costs include boat depreciation, fishing equipment depreciation (nets and fishing rods), and fiber depreciation costs. A sea trip's price consists of the fuel used (diesel) and consumption costs while at sea.

Table 6. Total Revenue from Fishermen in the Coastal District of Birem Bayeun, East Aceh Regency, 2023.

No	Description	Amount (IDR/Year)	Total Receipts (IDR /Year)	Rata-rata (IDR/Year)
1	Number of catches sold (Kg/Year)	107.908	2.773.020.000	66.024.286
	Total		2.773.020.000	66.024.286

Source: Primary Data (processed), 2023.

Based on Table 6, the total income earned by fishermen in the Coastal District of Birem Bayeun, East Aceh Regency/, is IDR 2,773,020,000/year with an average of IDR 66,024,286/year. Total revenue includes fishermen's catches sold. Based on the results of interviews, the yield of most fishermen in the Coastal District of Birem Bayeun is not all sold, but several kilograms are taken for their consumption.

Table 7. Total Income of Fishermen in the Coastal District of Birem Bayeun, East Aceh Regency, 2023.

No	Description	Amount (IDR/Year)	Average (IDR/Year)
1	Total Receipts	2.773.020.000	66.024.286
2	Total Expenditure	442.696.948	10.540.404
	Total	2.330.323.052	55.483.882

Source: Primary Data (processed), 2023

Based on Table 7, the total income obtained by fishermen in Pesisir, Birem Bayeun District, East Aceh Regency/Year is the total income of fishermen minus the total expenses of fishermen (total operational costs of fishermen) for one year, namely an income of IDR. 2,330,323,052/Year with an average IDR 55,483,882 / year.

Multiple Linear Regression Analysis

To make regression calculations easier from quite a lot of data, this research will be completed using computer software with the SPSS version 20 program. Test results on the variables skills (X₁), knowledge (X₂), attitudes (X₃), and experience work (X₄), which affect fishermen's income, can be seen in the following table:

Table 8. Results of Multiple Linear Regression Analysis

Model		Coefficients			t	Sig.	Collinearity Statistics	
		Unstandardized Coefficients		Standardized Coefficients			Tolerance	VIF
		B	Std. Error	Beta				
1	(Constant)	-23,374	24,789		-,943	,352		
	X1	1,212	1,009	,070	1,201	,237	,861	1,162
	X2	7,056	,413	,941	17,072	,000	,975	1,026
	X3	-2,936	,961	-,173	-3,054	,004	,925	1,081
	X4	,126	,161	,045	,781	,440	,905	1,105

Source: Primary Data (processed), 2023.

Based on the table above, the values listed are used to describe the regression equation as follows:

$$Y = -23.374 + 1.212 X_1 + 7.056 X_2 - 2.936 X_3 + 0.126 X_4$$

Based on the multiple linear regression equation above, the regression coefficient values can be interpreted as follows:

1. The constant of -23.374 states that if variable X (skills, knowledge, attitudes, and work experience) does not change (constant), then income will decrease by IDR. 23.374.000/year.
2. The regression coefficient X₁ (Skills) of 1.212 shows that for every unit/skill variable score increase, income (Y) will increase by IDR. 1,212,000/year.
3. The regression coefficient X₂ (Knowledge) of 7.056 shows that for every unit/score increase in the knowledge variable, income (Y) will increase by IDR. 7,056,000/year.
4. The regression coefficient X₃ (Attitude) is -2.936, indicating that for every unit increase/attitude variable score, it will decrease by IDR. 2,936,000/year.
5. The regression coefficient X₄ (Work Experience) is 0.126, indicating that for every one-year increase in the work experience variable, income (Y) will increase by IDR 126,000/year.

Influence of Skills (X₁) on Fishermen's Income (Y)

Based on the results of the tests, it is proven that skill (X₁) has no significant effect on fishermen's income in the Coastal District of Birem Bayeun, East Aceh Regency. This can be seen from the t-test results with a significance value of 0.237 > 0.05 and a count value of 1.201 < table 2.026, and the regression coefficient has a positive value of 1.212.

So, it shows that the skill variable (X_1) does not affect fishermen's income in Pesisir, Birem Bayeun District, East Aceh Regency.

Based on the test results above, skills do not affect fishermen's income in the Coastal District of Birem Bayeun, East Aceh Regency. This means that fishermen's skills, such as repairing ship engines and determining the right time to catch fish, do not affect fishermen's income.

The Effect of Knowledge (X_2) on Fishermen's Income (Y)

Based on the results of the tests carried out, it is proven that knowledge (X_2) has a significant effect. In the regression model, it is known that knowledge has a positive effect of 7.056 on fishermen's income in Pesisir, Birem Bayeun District, East Aceh Regency. Shows that for every increase in one unit of knowledge (variable X_2), the income variable (Y) will increase by IDR 7,056. Obtained a significance value of $0.000 < 0.05$ and $t_{\text{count}} 17.072 > t_{\text{table}} 2.026$, then H_a is accepted, and H_0 is rejected. So, it shows that the knowledge variable (X_2) influences fishermen's income in the Coastal District of Birem Bayeun, East Aceh Regency.

Based on the test results above, knowledge influences fishermen's income in the Coastal District of Birem Bayeun, East Aceh Regency. This means that fishermen's knowledge, such as various fishing methods, market prices, and work safety awareness in fishing activities, can increase fishermen's income.

Influence of Attitude (X_3) on Fishermen's Income (Y)

Based on the results of the tests, it is proven that attitude (X_3) has no significant effect, and the regression coefficient is known to have a negative value of -2.936. Shows that for every one-unit increase in attitude (variable X_3), the income variable (Y) will decrease by IDR 2,936,000/year. The significance value obtained was $0.004 < 0.05$, and $t_{\text{count}} 3.054 > t_{\text{table}} 2.206$, where the statement H_a was accepted and H_0 was rejected. So, it shows that the attitude variable (X_3) influences fishermen's income in the Coastal District of Birem Bayeun, East Aceh Regency.

The test results above show that attitudes can influence fishermen's income in the Coastal District of Birem Bayeun, East Aceh Regency. This means that fishermen's answers to statements follow the circumstances and opinions of fishermen at the research location.

Effect of Work Experience (X_4) on Fishermen's Income (Y)

Based on the results of the tests, it is proven that work experience (X_4) has no significant effect, and the regression coefficient has a positive value of 0.126. Shows that for every one-year increase in work experience (variable X_4), the income variable (Y) will increase by 0.126 rupiahs. Obtained a significance value of $0.440 > 0.05$ and $t_{\text{count}} 0.781 < t_{\text{table}} 2.026$; this shows that the H_a hypothesis is rejected and H_0 is accepted. This means there is no influence between the work experience variable (X_4) and fishermen's income in Pesisir, Birem Bayeun District, East Aceh Regency.

Work experience does not affect fishermen's income in Pesisir, Birem Bayeun District, East Aceh Regency. It can be seen that the respondents' answers indicate that fishermen's work experience of more than 20 years does not dominate. This means that work experience does not affect the number of fishermen's catches in the coastal district of Birem Bayeun. These results follow research conducted by Darfiana (2019) entitled

"Factors that Influence Fishermen's Income in Tanjung Harapan Village, East Sebatik District," which states that work experience does not significantly influence fishermen's income.

CONCLUSION

Fishermen's knowledge and attitudes significantly influence fishermen's income in Birem Bayeun District, East Aceh Regency. Skills and work experience do not affect fishermen's income in Birem Bayeun District, East Aceh Regency.

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