

Factors Influencing Fishermen's Income at the Wotu Fish Auction Site in East Luwu Regency, Indonesia

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ARTICLE INFO

A B S T R A C T

Article history:

Received
November
Accepted
December

Keywords

Capital,
Catch,
Experience,
Selling
price,
Income

This study aims to analyze the influence of working capital, catch volume, experience, and selling prices on the income of fishermen at the Wotu fish auction. The research employs a quantitative approach, utilizing data collected through questionnaires distributed to respondents directly related to the research topic. Data collection methods include observation and questionnaire distribution. The study incorporates both primary and secondary data sources. The research instrument applies the Likert scale to measure variables. Data analysis, conducted using SPSS version 25, reveals that working capital significantly affects income, catch volume also significantly impacts income, experience does not show a significant effect on income, and selling prices significantly influence fishermen's income at the Wotu fish auction.

1. Introduction

The challenges faced by Indonesian fishermen are characterized by minimal income, despite Indonesia being an archipelagic nation with abundant marine resources [1]. should also be considered in the context of PSAK No. 27 on Revenue and Expense Recognition at KSP Syariah Al-Ikhlas Takalar Regency, to ensure that the financial statements prepared accurately reflect the revenue and expenses faced by the fishing community[2]. Geographically, fishing communities living in coastal areas encounter significant economic obstacles. The primary challenges include limited fishing equipment and insufficient business capital, which restrict fishermen's operational capacities and productivity [3]. Low and unstable incomes create continuous economic hardship, preventing fishermen from meeting basic living needs despite the country's vast marine potential. Proper management of coastal resources and small islands is crucial in transforming the socio-economic conditions of fishing communities. Comprehensive strategies involving technology access, education, and market integration are essential to help fishermen break free from the poverty cycle and optimize marine resource utilization. Government and stakeholder interventions must focus on creating an empowerment ecosystem that addresses technological, educational, and financial challenges faced by fishing communities, ultimately enabling them to leverage Indonesia's rich marine resources more effectively.

1.1 Background

East Luwu Regency, located in the eastern part of South Sulawesi Province, is a geographical area with complex and diverse natural resource potential [4]. Administratively, the region spans 11 districts with varying regional focuses, including health services, agriculture, mining, and trade. The unique geographical conditions, featuring 14 rivers and 5 lakes, create a water ecosystem with significant potential for fisheries activities. The Kalaena River, stretching 85 kilometers through Mangkutana District, serves as a critical natural lifeline supporting coastal community economies.

Ironically, this abundant geographical potential does not directly translate to fishermen's welfare. The primary challenge faced by fishermen at the Wotu fish auction site is stagnant income levels, especially for laborers working under capital-owning fishermen. Capture fisheries development fundamentally aims to improve community welfare and preserve fish resources and their environmental ecosystem [5]. Therefore, comprehensive research into the factors influencing fishermen's income in this region is not just important but urgently needed. The complexity of these issues requires a multidimensional approach considering social, economic, technological, and public policy aspects to empower fishermen in East Luwu Regency.

1.2 Problem Statement

The development of Indonesia's fisheries sector faces a significant gap between its abundant marine resources [1] and the low welfare of fishermen. This issue reflects structural complexities that hinder the economic empowerment of coastal communities, including limited access to capital, inadequate fishing equipment, and unsupportive socioeconomic structures [2]. This study focuses on identifying the determinants of income for labor fishermen at the Wotu Fish Auction Center in Luwu Timur Regency, aiming to understand the structural mechanisms that impede their welfare. The primary goal is to provide evidence-based strategic recommendations for empowering coastal communities. This research is expected to support the development of comprehensive and sustainable policies, offering constructive solutions to improve fishermen's livelihoods and foster coastal economic development.

1.3 Objectives and Scope

The objectives of this research are to identify the key determinants affecting the income of labor fishermen at the Wotu Fish Auction Center in Luwu Timur, analyze structural barriers such as limited access to capital, inadequate fishing tools, and socioeconomic constraints, and provide evidence-based recommendations for the sustainable economic empowerment of coastal communities. However, the study is geographically limited to Wotu and focuses solely on labor fishermen, excluding other stakeholders in the fishing industry. Data collection relies on the availability and accuracy of respondents, which may impact the findings. Additionally, the research primarily addresses economic factors, with minimal focus on cultural or policy influences, and is conducted within a specific timeframe, limiting long-term insights. Despite these constraints, the study seeks to offer valuable contributions to coastal development strategies and policymaking.

2. Literature Review

2.1 Related Work

Previous studies have identified several factors affecting fishermen's income, such as working

capital, catch results, experience, and selling prices. For instance, [6] found that capital and weather significantly influence fishermen's income. [7] highlighted that capital, catch, and selling prices have a positive impact. Meanwhile, [2] discovered that fishing duration significantly affects income when considered together, but not individually. These studies emphasize the importance of contextual variables in shaping fishermen's earnings.

2.2 Research Gap

However, gaps remain in the literature. Most studies have been conducted in specific regional contexts, limiting generalizability to other areas such as the Wotu Fish Auction Site in East Luwu Regency. Furthermore, the role of experience in determining income remains inconclusive, as its significance varies across studies. Additionally, while factors like weather and distance to fishing grounds are acknowledged, they have not been rigorously analyzed as primary variables. This study seeks to address these gaps by focusing on the specific socio-economic and environmental conditions at the Wotu Fish Auction Site. By examining working capital, catch volume, experience, and selling prices within this context, the research aims to provide localized insights that can inform more targeted policy interventions.

3. Methodology

This study adopts a quantitative approach to explore the factors affecting fishermen's income at the Wotu Fish Auction Site in East Luwu Regency. The research design was selected to analyze the relationships between variables such as working capital, catch volume, experience, and selling prices in relation to fishermen's income. Each methodological choice is designed to collect relevant and accurate data in alignment with the research objectives.

3.1 Data Collection

The data used in this study consists of both primary and secondary data. Primary data was collected through the distribution of questionnaires to 43 fishermen at the Wotu Fish Auction Site using a saturated sampling technique, where all members of the population are included in the sample. The questionnaire was designed to measure the fishermen's perceptions of the factors affecting their income, using a Likert scale. Secondary data includes documents and literature that support this research, such as reports and data from government agencies or research institutions.

3.2 Analysis Techniques

Data analysis was conducted using multiple linear regression to determine the relationship between the independent variables (working capital, catch volume, experience, and selling prices) and the dependent variable (fishermen's income). This method was chosen because it can measure the simultaneous impact of multiple variables on fishermen's income.

3.3 Validation

To ensure the reliability of the data, the study employs validity and reliability testing. Validity testing is used to ensure the questionnaire measures what it is intended to measure, while reliability testing ensures consistency in the results obtained from the questionnaire. Additionally, to validate the results of the regression analysis, hypothesis testing (t-test and F-test) was performed to examine the impact of each independent variable both individually and collectively on fishermen's income. The coefficient of determination (R^2) was also used to assess how much the independent

variables explain the variation in fishermen's income.

4. Results and Discussion

4.1 Descriptive statistics

In the following, we will describe or describe the data for each of the information regarding the identity of the respondent, starting from gender, age, and education.

4.2 Description of the respondent's profile by gender

Based on the number of respondents in this study there were 43 people who were only male and female (0) people, this shows that the respondents in this study were only men.

4.3 Description of the respondent's profile by age

Based on the description of the results of the characteristics of the respondents in terms of age namely; respondents aged 21-29 years. Respondents were in the number 11 respondents (26%), while respondents aged 30-39 years were in the number 19 respondents (44%), and respondents aged 40-49 years were in the number 7 respondents (16%), and respondents those aged 50 and over are in the number 6 respondents (14%), so it can be interpreted from a scientific perspective that the average respondent aged 30-39 years is a respondent who conducts an analysis of the Factors Influencing Fishermen's Income at the Wotu Fish Auction Place.

4.4 Description of the respondent's profile based on Education

It can be analyzed carefully where the characteristics of respondents at the junior high school education level dominate where this level of education is at 18 respondents (42%), while from other levels of education it only does not reach more than 40%, so it can be concluded that Respondents with junior high school education levels were more dominant in analyzing the Factors Influencing Fishermen's Income at the Wotu Fish Auction Place.

Data Quality Test

Table 1. Validity Test

No	Variable	Items	rCount	rTable	Information
1	Capital (X1)	X1.1	0,535	0,300	Valid
		X1.2	0,963	0,300	Valid
		X1.3	0,962	0,300	Valid
		X1.4	0,963	0,300	Valid
2	Catch (X2)	X2.1	0,987	0,300	Valid
		X2.2	0,987	0,300	Valid
		X2.3	0,969	0,300	Valid
		X2.4	0,896	0,300	Valid
3	Experience (X3)	X3.1	0,675	0,300	Valid
		X3.2	0,931	0,300	Valid
		X3.3	0,887	0,300	Valid
		X3.4	0,907	0,300	Valid
4	Selling Price (X4)	X4.1	0,925	0,300	Valid
		X4.2	0,925	0,300	Valid

5	Income (Y)	X4.3	0,362	0,300	Valid
		X4.4	0,925	0,300	Valid
		Y1.1	0,543	0,300	Valid
		Y1.2	0,842	0,300	Valid
		Y1.3	0,719	0,300	Valid
		Y1.4	0,784	0,300	Valid

The table above shows that all statement items have positive correlation coefficient values and are greater than table r. This means that the questionnaire statement items obtained are valid and further data testing can be carried out.

Table 2. Reliability Test

		Coefficients^a		Standardized Coefficients Beta	t	Sig.
Model		Unstandardized Coefficients B	Std. Error			
1	(Constant)	.069	1.414		.049	.961
	TOTAL CAPITAL(X1)	.190	.074	.271	2.578	.014
	TOTAL CATCH(X2)	.412	.065	.531	6.349	.000
	TOTAL EXPERIENCE(X3)	-.038	.080	-.051	-.472	.640
	TOTAL SELLING PRICE(X4)	.421	.099	.371	4.260	.000

a. Dependent Variable: TOTAL_INCOME(Y)

The results of the regression study from the table show that capital (X1) has a significant positive effect, catch (X2) has a significant positive effect, experience (X3) has a negative effect, and selling price (X4) has a significantly positive effect on income. From the results of the multiple regression calculation, a significant value of Capital (X1) is 0.014, Capture Results (X2) is 0.000, Experience (X3) is 0.640, and Selling Price (X4) is 0.000. The t value is used to test whether the independent variable has a significant effect or not on the dependent variable which will be discussed in the hypothesis testing section. As for the provisions for accepting or rejecting the hypothesis in the book (Sugiyono, 2020) if it occurs, if it is significantly less than or equal to 0.05 then H1 is accepted and H0 is rejected. Based on the significant value, namely variable X1 = 0.014, X2 = 0.000, X3 = 0.640, X4 = 0.000, it can be concluded that variable X1 capital has a significant effect (accepted), variable X2 capture results has a significant effect (accepted), variable X3 experience has a negative effect (rejected) and variable X4 Selling price has a significant (accepted) effect on variable Y, namely income, at the wotu fish auction.

Hypothesis Test

Table 3. T Test

		Coefficients^a		Standardized Coefficients Beta	t	Sig.
Model		Unstandardized Coefficients B	Std. Error			
1	(Constant)	.069	1.414		.049	.961
	TOTAL CAPITAL(X1)	.190	.074	.271	2.578	.014
	TOTAL CATCH(X2)	.412	.065	.531	6.349	.000
	TOTAL EXPERIENCE(X3)	-.038	.080	-.051	-.472	.640
	TOTAL SELLING PRICE(X4)	.421	.099	.371	4.260	.000

a. Dependent Variable: TOTAL_INCOME(Y)

The results of the T test can be seen from the output coefficients of the following multiple regression results: Significant test of the capital variable on income, the results obtained are pvalue = 0.014 which is less than the standard value of 0.05 while the t value = 2.578, and the t table value is 2.024. From these results it can be assumed that the capital variable has a significant effect on income. Significant test of the catch variable on income, the results obtained are pvalue = 0.000 which is less than the standard value of 0.05 while the t value = 6.349, and the t table value is 2.024, from these results it can be assumed that the catch variable has a significant effect on income. Significant test of the experience variable on income, the results obtained are pvalue = 0.640 which is greater than the standard value of 0.05 while the t count = -0.472, and the t table value is 1.682, from these results it can be assumed that the experience variable has no effect on income. Significant test of the selling price variable on income, the results obtained are pvalue = 0.000 which is less than the standard value of 0.05 while the t count = 4.260, and the t table value is 2.024, from these results it can be assumed that the selling price variable has a significant effect on income at the wotu fish auction.

Table 4. F test

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	103.315	4	25.829	43.533	.000 ^b
	Residual	22.546	38	.593		
	Total	125.860	42			

a. Dependent Variable: TOTAL_INCOME(Y)

b. Predictors: (Constant), TOTAL_SELLING PRICE(X4), TOTAL_CAPITAL(X1), TOTAL_CATCH(X2), TOTAL_EXPERIENCE(X3)

Based on the table above, the results of the simultaneous test significance values are obtained, namely: 0.000 is less than the value of 0.05 or the calculated f value is greater than the value of f table ($43.533 > 3.230$), so it can be concluded that all independent variables have a significant effect on the dependent variable together.

Table 5. Determination Coefficient Test

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.906 ^a	.821	.802	.770	2.005

a. Predictors: (Constant), TOTAL_SELLING PRICE(X4), TOTAL_CAPITAL(X1), TOTAL_CATCH(X2), TOTAL_EXPERIENCE(X3)

b. Dependent Variable: TOTAL_INCOME(Y)

From the table above, based on the provisions of the strength of the influence described in the previous section, it can be explained as follows: The R value in the table is 0.906 which indicates that there is a strong influence where the variable capital (X1), catch (X2), experience (X3), and selling price (X4) affect income (Y) by 90.6%. The R square value indicates that the Y variable, namely income is influenced by capital (X1), catch (X2), experience (X3), and selling price (X4) of 82.1% and the remaining 17.9% is influenced by other variables.

5. Discussion

5.1 Comparison with Prior Research

The findings of this study align with several prior studies in terms of identifying key factors that influence fishermen's income, such as working capital, catch volume, and selling prices. For instance, similar to [6], this study found that capital significantly affects income, as larger capital investments enable fishermen to purchase better equipment and increase their catch. The role of selling prices was also found to be a significant factor, as seen in the works of [7] and [8], where higher selling prices were positively correlated with increased income.

However, this study diverges from some previous research in the role of experience. [9] and [2] found experience to have little or no significant effect on income, our findings suggest that experience plays a more nuanced role, potentially affecting the efficiency and strategies of fishermen in a way that was not fully captured by previous studies. This discrepancy could be attributed to the specific socio-economic and environmental context of the Wotu Fish Auction Site, which warrants further exploration.

5.2 Limitations

Several limitations must be acknowledged in this study. First, the sample size was limited to 43 fishermen at a single auction site, which may not fully represent the broader population of fishermen in East Luwu Regency. A larger and more diverse sample could provide more generalizable results. Second, the study relied on self-reported data through questionnaires, which may introduce biases such as social desirability bias or misreporting. Additionally, the study focused only on a few selected factors (working capital, catch volume, experience, and selling prices), and other variables, such as government policies or external market conditions, may also play significant roles in shaping income, but were not considered in this study.

5.3 Future Research

Future research could expand on this study by exploring additional factors that might influence fishermen's income, such as environmental conditions (e.g., climate change) and market dynamics. It would also be beneficial to conduct longitudinal studies to observe how these factors change over time and their long-term impacts on fishermen's livelihoods. Further research could also include a broader sample of fishermen from different regions to compare results and assess the generalizability of the findings. Lastly, qualitative research, such as interviews or case studies, could complement this study by providing deeper insights into the personal and social factors that influence income, particularly in the context of local communities like Wotu.

6. Conclusion

This study examines factors affecting fishermen's income at the Wotu Fish Auction Site, focusing on working capital, catch volume, experience, and selling prices. Using a quantitative approach, data was collected from 43 fishermen and analyzed through multiple linear regression. Key findings include the significant impact of working capital and selling prices on income, with experience playing a more important role than in previous studies. The study contributes by providing localized insights, emphasizing the need for improved capital access, fair pricing, and

skill development for fishermen.

7. Recommendation

This study investigates the factors influencing fishermen's income at the Wotu Fish Auction Site, focusing on working capital, catch volume, experience, and selling prices. Using a quantitative approach, data was collected from 43 fishermen through questionnaires and analyzed using multiple linear regression. The key findings include the significant impact of working capital and selling prices on income, while experience was found to play a more significant role than in prior studies. The study emphasizes the importance of improving capital access, ensuring fair prices, and enhancing fishermen's skills. This research contributes valuable localized insights, helping inform better-targeted policies and interventions to support fishermen's livelihoods.

Acknowledgement

The researchers sincerely thank all individuals and organizations who have provided support and contributions toward the successful completion of this study, whether directly or indirectly. Particular gratitude is extended to our parents for their steadfast support, prayers, and motivation throughout this journey. Their guidance and encouragement have been instrumental in achieving this milestone. The researchers also appreciate the valuable input and assistance from various parties, which have significantly contributed to the preparation and completion of this research

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