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Analysis of Factors Influencing the Welfare of Fishermen in Lake Sentani, Jayapura Regency

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ABSTRACT

This study examines the socio-economic conditions of fishermen in Lake Sentani, Jayapura Regency, with a focus on challenges and local wisdom-based strategies to improve their welfare. Lake Sentani, as a major natural resource, has great potential in the fisheries and tourism sectors, but fishermen face problems such as resource exploitation, pollution, and limited access to technology. This study used multiple regression analysis. The results show a dependence on traditional fishing, low productivity, and capital and marketing constraints. Factors such as education, experience, capital, and access to facilities significantly influence fishermen's welfare. Existing fisheries policies remain weak in terms of socialization and oversight. To improve welfare, income diversification, technology adoption, and capacity building for fishermen are needed. Local wisdom-based strategies include pollution management, zoning management, business literacy, and the development of environmentally friendly and sustainable local fisheries value chain-based business models. Collaboration between business actors and digital technology is crucial to expanding markets and improving fishermen's welfare.

Keywords: *Fishermen's Welfare, Resource Management, Lake Sentani, Sustainability, Added Value, Local Wisdom*

1. INTRODUCTION

Lake Sentani is the largest natural lake in Papua Province, covering an area of 9,630 hectares and spread across three districts: Sentani, East Sentani, and Ebungfauw [1]. Lake Sentani produces 3,500 tons of fish annually, comprising capture fisheries and aquaculture [2]. The dominant fish species caught are: seli/sembilang, large gete-gete, small gete-gete, snakehead, red snakehead, gastor, black snakehead, kaskado/hewu, red eye, tambakan, Siamese gourami, tilapia, nilem, carp, and kehilo/sogili [3].

In addition to fisheries, Lake Sentani also has tourism potential that contributes to improving the local economy and community welfare [4]–[7]. The Government of the Republic of Indonesia has designated Lake Sentani as one of 15 national priority lakes requiring sustainable conservation efforts based on Presidential Regulation of the Republic of Indonesia Number 60 of 2021.

Despite its significant potential, fishermen in Lake Sentani face various challenges, including exploitation of fishery resources (Rumainum, 2023), pollution from domestic and industrial waste [1], and limited access to modern technology and limited business funding, which are major factors contributing to their worsening welfare [8].

Fisheries management policies still face challenges, such as weak oversight of overfishing practices and minimal policy interventions that support fisherman welfare [9]. Implemented regulations have not been effective in balancing economic and environmental sustainability aspects, resulting in social inequality for fishers [10]. The research objective is to analyze the factors contributing to the level of fisherman welfare and the added value of fisheries for fishers in Lake Sentani, Jayapura Regency.

2. METHODS

The research plan will be implemented in Jayapura Regency covering 2 (two) Districts, namely East Sentani and Heram District. This research will be conducted from April-June 2025. The research population is fishermen in Lake Sentani in East Sentani and Heram Districts of Jayapura Regency with a population of 1,100 families. The sample determination uses the Purposive sampling method with a percentage of 8%, namely 88 or 90 respondent families.

Types of data used Primary data obtained through questionnaires: Socio-economic data, income, operational costs, types of fishing gear, assets, production. Secondary data obtained from: Jayapura Regency in figures, inland fisheries and aquaculture production documents, and annual fisheries reports for 2015-2025. Data sources obtained from the Jayapura Regency Marine and Fisheries Service Bappeda; local fishermen, fisheries entrepreneurs, local academics, mass media.

Method of collecting data: a) Literature Study. This study uses research reports, scientific journals, fisheries statistics and annual reports on fisheries management, Interviews with stakeholders: respondents, entrepreneurs in processed tilapia, catfish, gastor, carp fish businesses, fishermen groups, the Maritime Affairs and Fisheries Service, Bappeda, Local communities, local academics, c. Focus Group Discussion (FGD) with fisheries management stakeholders, to obtain input related to the research location and research respondents, d. Field surveys were conducted to obtain data on inland fisheries management, and data on the inland fisheries processing industry. Data Analysis Method: Analysis of factors contributing to the level of fishermen's welfare, and the added value of fisheries using the multiple regression analysis approach.

3. RESULTS AND DISCUSSION

3.1 Description of Research Respondents

The respondents in this study were fishing communities living and dependent on the Lake Sentani ecosystem in Jayapura Regency, Papua. The communities surrounding Lake Sentani generally share unique socio-economic characteristics, as traditional fishermen, who fish both for their daily needs and as their primary livelihood. This area is home to a local community, predominantly from the Sentani Tribe, whose lifestyles and customs are deeply rooted in the lake's fishing traditions.

The population around Lake Sentani is quite dense, with numerous villages scattered along the shoreline and islands. Most residents are fishermen, who contribute significantly to the local economy by providing animal protein and employment. Therefore, studying fishermen and their socio-economic conditions is crucial to provide a comprehensive picture of the well-being and challenges facing the lake's coastal communities.

Fishermen in Lake Sentani have traditionally utilized freshwater fish resources as their primary source of income. The lake's ecological conditions and environmental quality also directly impact fishermen's productivity and well-being. Changes in habitat quality and the pressure of human activity are crucial factors affecting the survival of fishermen and the sustainability of fish resources in Lake Sentani.

Demographically, respondents from the representative group of fishermen represent a diverse range of productive age groups, with varying levels of education and years of fishing experience. This combined data provides a valuable insight into the characteristics and needs of fishermen's welfare development in the Lake Sentani region, based on sustainable natural resource utilization.

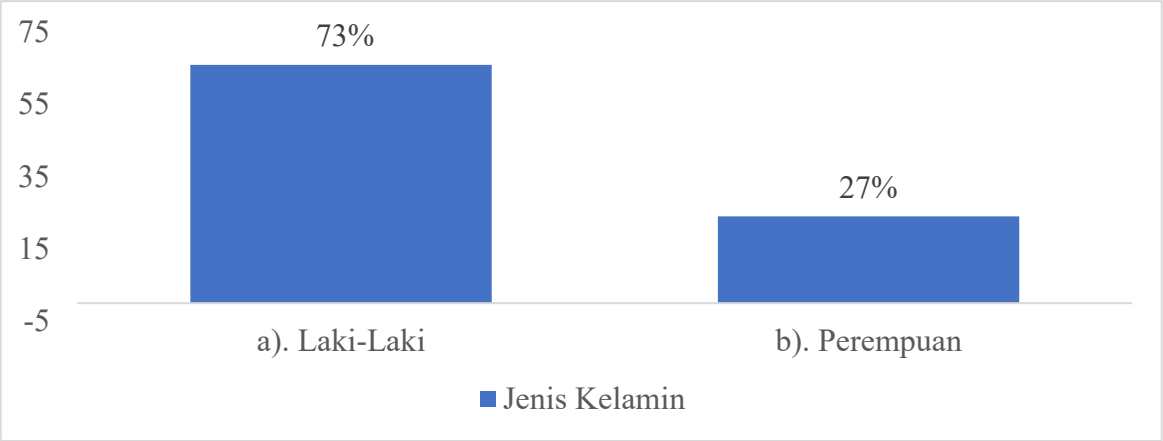

Figure 3. Gender of Respondents
Source: Processed Primary Data, 2025

Based on field data, the majority of fishermen in Lake Sentani, Jayapura Regency, are men (73%), while women make up only 27%. This indicates that fishing activities are still dominated by men, who have traditionally been the primary actors in the fisheries sector. This condition aligns with inherent socio-cultural roles, where men have historically been more active in fishing activities, while women are more involved in supporting activities such as fish processing and marketing.

Previous research supports these findings, as described in a study by [11] in Jayapura Regency, which found that the social and economic structures in the area are still heavily influenced by traditional norms that limit women's roles in direct fishing activities, despite women playing significant roles in the downstream fisheries sector and family economic activities. Other studies also point to challenges in increasing women's participation in capture fisheries activities, given physical constraints, access to resources, and limited gender-adaptive training.

In the context of Lake Sentani, strengthening the role of women through culturally tailored training and empowerment programs is crucial so that women can contribute more effectively not only in the processing and marketing sectors, but also in decision-making within the fisheries community, given the strategic role of women in food security and natural resource management.

Thus, increasing gender equality in the fisheries sector in Lake Sentani needs attention as part of an inclusive and sustainable community empowerment effort, so that the economic and social potential of all community members can be optimized.

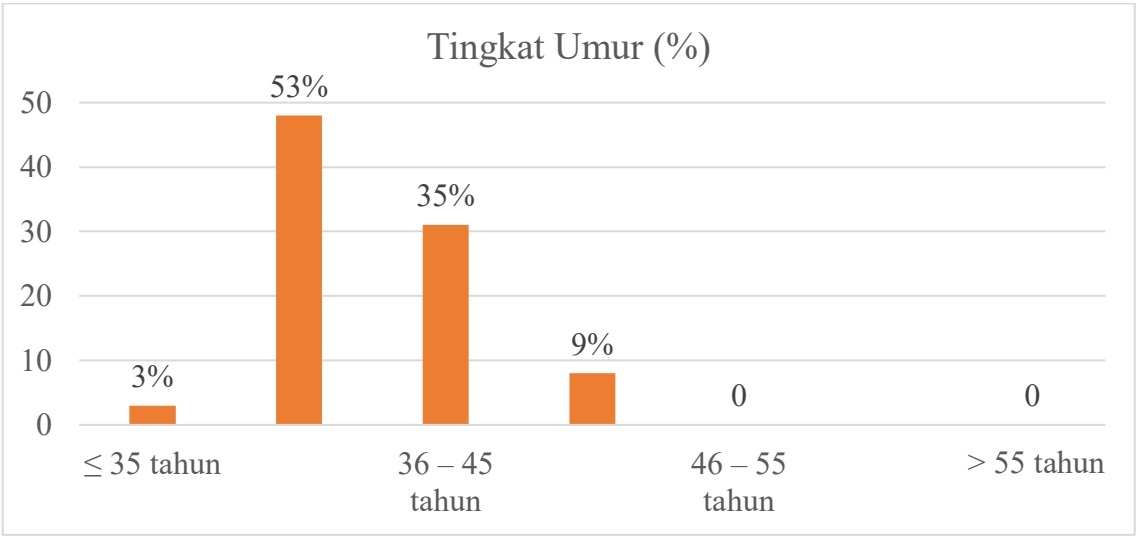

Figure 4. Age level (%)
Source: Processed Primary Data, 2025

The age distribution of fishermen in Lake Sentani, Jayapura Regency, is predominantly within the productive age range: 53% are under 35 years old and 35% are between 36 and 45 years old, with only a small number of older fishermen. This indicates positive regeneration in the Lake Sentani fisheries sector, a positive indicator for the sector's sustainability.

This dominant younger generation has significant potential to adopt new technologies and innovations in fisheries practices, which are crucial for increasing the productivity and efficiency of fisheries management in Lake Sentani. However, training and technological adaptation are essential for this generation to optimally utilize these opportunities. A study by [12] emphasized that capacity building and education for young fishermen regarding environmentally friendly fishing technologies and business management are essential for maintaining the sustainability and carrying capacity of the Lake Sentani ecosystem while supporting fishermen's welfare. Furthermore, the sustainability of lake fisheries also depends on ongoing training efforts facilitated by the local government and development partners to anticipate the challenges of environmental and social change [13].

Overall, the productive age distribution of fishermen and the regeneration of these fishermen provide strategic potential for innovation-based fisheries development and sustainable management in Lake Sentani, as long as they are supported by appropriate policies, training, and empowerment.

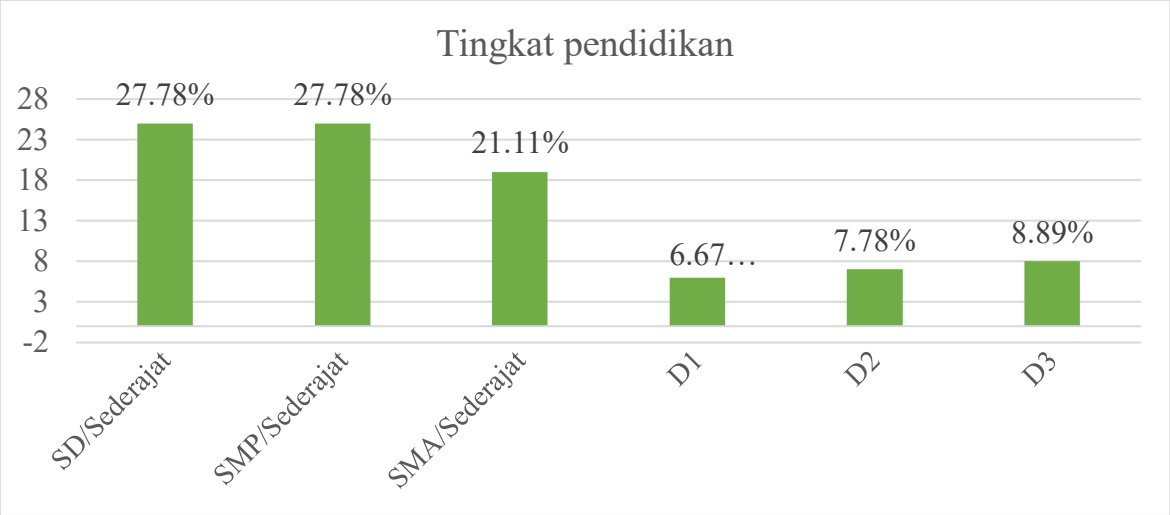

Figure 5. Education Level (%)
Source: Processed Primary Data, 2025

The majority of fishermen in Lake Sentani, Jayapura Regency, have varying levels of education, with the largest proportion having only completed elementary school (SD) or its equivalent (27.78%), followed by junior high school (SMP) or its equivalent (21.11%). High school and college education are relatively low among fishermen. This significantly impacts their ability to access information on new technologies and develop more modern and productive fishing businesses.

This low level of education impacts fishermen's limited understanding of sustainable fisheries resource management, environmentally friendly fishing techniques, and the use of digital technology innovations in marketing and processing their catch. As explained by [14] research, fishing activities in Lake Sentani still rely heavily on traditional methods with low productivity and subsistence-based businesses. Low education reinforces this pattern by making it difficult for fishermen to adapt to technological changes and modern business management.

Other research shows that improving environmental literacy and education is crucial for raising the awareness and skills of local communities, particularly the younger generation, in

preserving Lake Sentani and supporting fisheries-based economic empowerment [15]. Providing environmental education and introducing fisheries-related technology can also help fishermen increase productivity while maintaining the sustainability of the lake's ecosystem.

Therefore, the fisheries sector development strategy in Lake Sentani should include education and training programs that emphasize improving the technical, managerial, and digital capacities of fishermen, enabling them to manage their fisheries businesses more efficiently and sustainably. This educational approach must be tailored to the socio-cultural conditions and knowledge levels of respondents to be more effective in increasing the independence and innovation of local fisheries businesses.

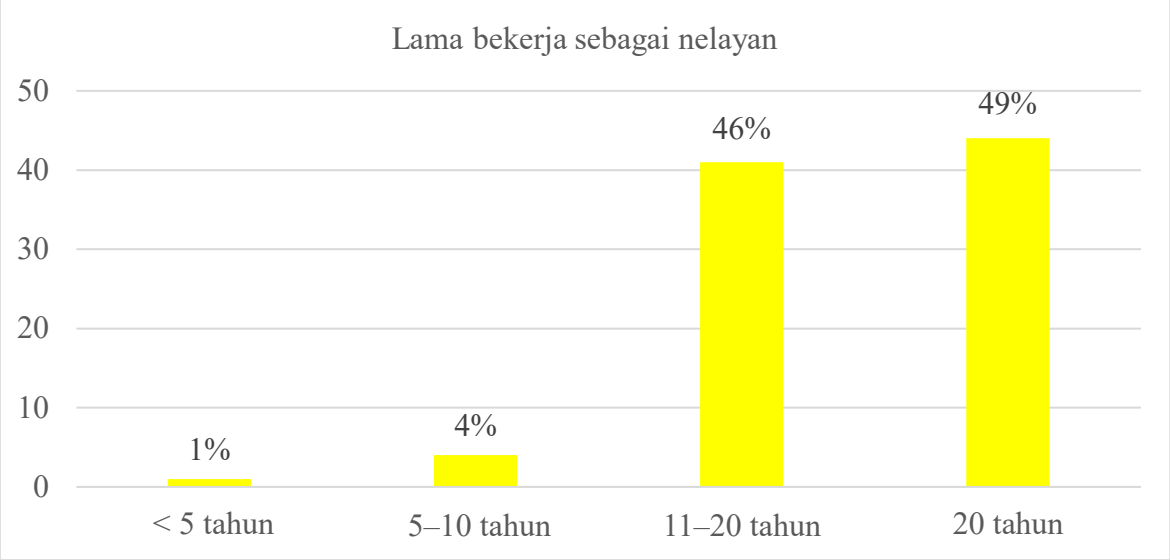

Figure 6. Length of Time Working as a Fisherman

Source: Processed Primary Data, 2025

Most fishermen in Lake Sentani, Jayapura Regency, have extensive experience in the fisheries sector, with 46% working for 5–10 years and 49% between 11–20 years. This indicates sufficient experience to drive productivity increases. However, prolonged experience without being balanced by innovation and skills renewal can be a barrier, as stagnant old practices can hinder adaptation to environmental changes and new technologies.

Research by Revan Pallo (2021) shows that fishermen in Lake Sentani have long been engaged in fishing. However, in recent years, they have faced the challenge of declining catches due to habitat destruction and the introduction of new predators, such as the Lohan fish and the Tilapia, which have replaced endemic native fish. This situation requires fishermen to continuously innovate to remain productive amidst ecosystem changes and environmental pressures.

Other research confirms that fishermen's extensive experience requires training and mentoring to enable them to adopt environmentally friendly fishing gear and improve business management. Lack of innovation can lead to decreased productivity, as traditional methods no longer optimally address the challenges of changing fish stocks and increasingly stringent fisheries management policies [16].

Thus, strengthening the capacity of fishermen through ongoing training is crucial to ensure that their experience can become a productive resource, while also opening up opportunities for innovative adaptation to maintain the sustainability and productivity of fisheries in Lake Sentani.

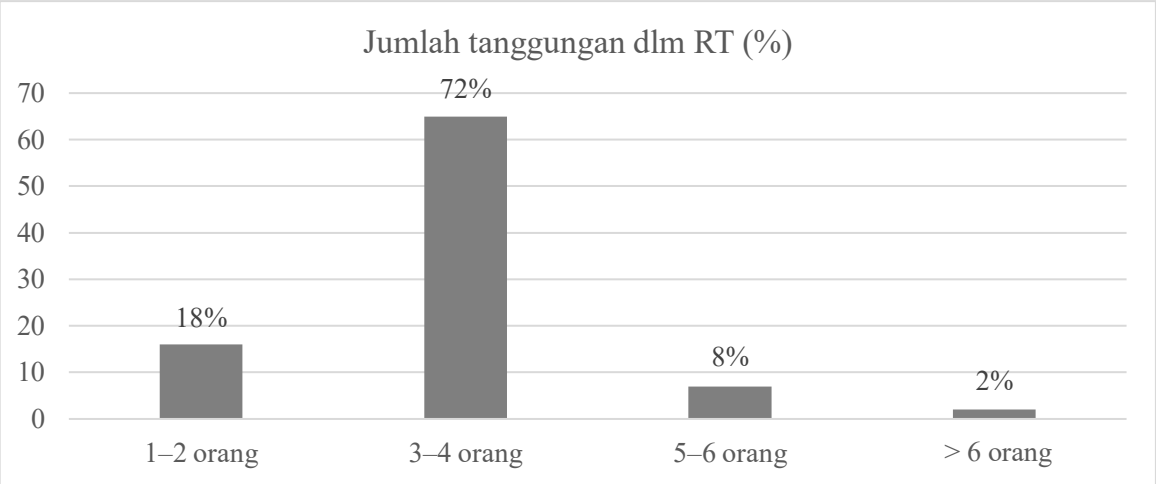

Figure 7. Number of Dependents in The Household (%)
Source: Processed Primary Data, 2025

The majority of fishermen in Lake Sentani have one to two dependents, or approximately 72%. This indicates that the family burden required to be met from fishermen's income is moderate. This family burden directly impacts the welfare of fishing families, which in turn affects their ability to invest in their family's education and health needs.

In the socioeconomic context of the Lake Sentani fishing community, the relatively small family structure allows for a more optimal focus on income generation. However, limited income from fishing activities remains a challenge for meeting basic needs and developing family capacity. This aligns with [17] findings, which state that fishing families with small to moderate households tend to have more manageable economic pressures, but still require support to increase business productivity and training in family financial management to improve sustainable well-being [17].

In addition, the role of traditional institutions and local social systems in Sentani, which are still strong, also helps manage resources and support the traditional economic life of fishing families, although challenges in accessing education and health services remain an issue that needs attention [18].

Thus, the development of a fishermen's empowerment program in Lake Sentani needs to target aspects of increasing the income and capacity of fishermen's families, taking into account the relatively moderate dependency structure in order to optimally improve family welfare in a holistic and sustainable manner.

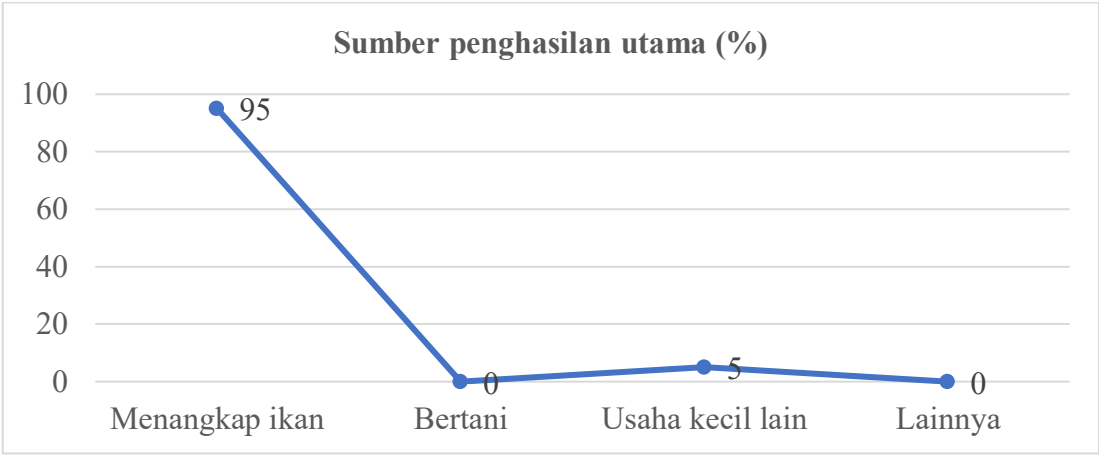

Figure 8. Main Source of Income (%)
Source: Processed Primary Data, 2025

All fishermen respondents in Lake Sentani, Jayapura Regency, stated that their primary activity was fishing (100%), reflecting a complete dependence on the fisheries sector as their primary source of family income. However, in addition to fishing, the people around Lake Sentani also engage in various other activities, particularly fish farming, processing catches, and other fisheries-related economic activities.

According to a report from the Jayapura Regency Fisheries and Maritime Affairs Office, many communities are exploiting the inland fisheries potential of Lake Sentani by cultivating fish in floating net cages. Approximately 329 fishing households operate boats and net cages, producing hundreds of tons of fish annually, making fish farming an important alternative activity to support fishermen's livelihoods and increase family income [19].

Furthermore, efforts to develop fisheries products are also being carried out through a partnership system between fishing groups and capital owners to increase production scale and improve catch quality. The Papua Provincial Maritime Affairs and Fisheries Office has initiated this partnership program as an innovation to boost productivity and explore broader market potential [19].

The fish catch in Lake Sentani is dominated by endemic and local fish, such as carp and tilapia. Fishermen use traditional fishing gear such as gillnets and spearfish, as well as non-motorized boats, which are typical of the region. Fishing is carried out intensively at various times of the day and night, making capture fisheries a mainstay of the community's livelihood [20].

Furthermore, fishermen in Lake Sentani are also involved in processing their catch and marketing it locally, adding value and strengthening family economic resilience. However, limited infrastructure, market access, and technology remain key challenges that must be addressed to sustainably improve the welfare of fishing communities.

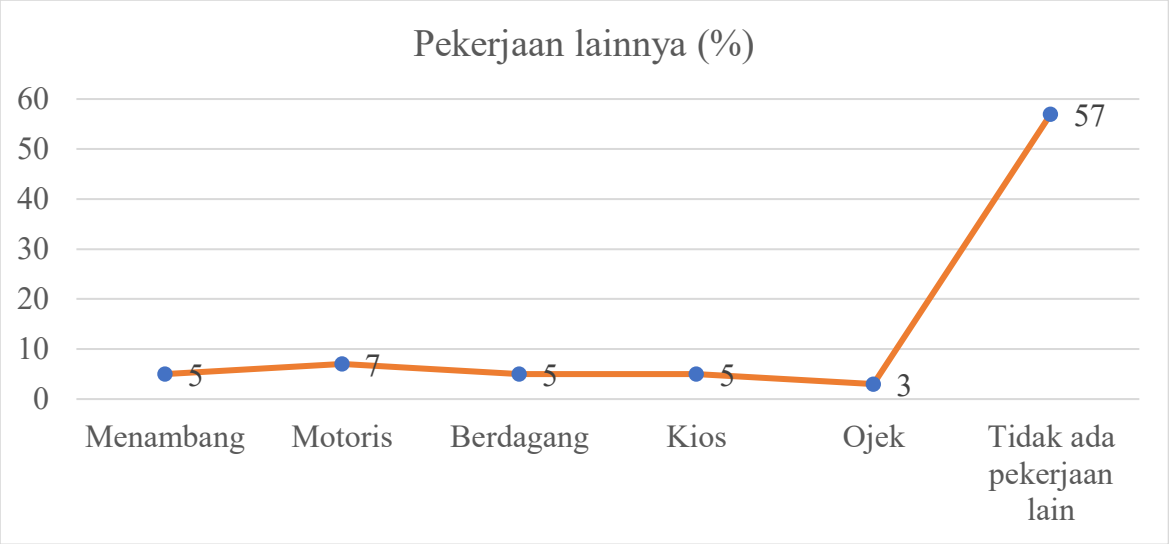

Figure 9. Other Jobs (%)

Source: Processed Primary Data, 2025

Some fishermen on Lake Sentani in Jayapura Regency have side jobs to diversify their income sources and supplement their family income. These side jobs include mining (8%), driving a motorbike (6%), trading (6%), kiosks (4%), and motorcycle taxis (70%). The high proportion of fishermen working as motorcycle taxis demonstrates the crucial role of local transportation as a supplementary source of income, especially for those whose income from fishing is insufficient to meet their family's economic needs.

This diversification reflects an economic adaptation strategy amid limited catches and fluctuating fisheries markets. According to economic valuation data from Lake Sentani, in addition to providing a livelihood for fisheries, the lake also serves as a means of transportation between

villages, impacting the local economy [21]. These side jobs are crucial in maintaining the economic resilience of fishing households while reducing the risk of total dependence on fisheries, which are vulnerable to uncertainty.

A study by [22] confirmed that income diversification among fishermen is a crucial strategy for improving the welfare and strengthening the socioeconomic resilience of coastal communities in Papua. Side activities such as transportation services (motorcycle taxis), small-scale trading, and other informal jobs are alternatives that support the financial stability of fishing families in the face of irregular fish catches.

Therefore, understanding and support for fishermen's side jobs must be strengthened through policies that facilitate access to capital, skills training, and infrastructure development to support these alternative businesses. This will strengthen the economic resilience of the Lake Sentani fishing community and improve the welfare of the wider community.

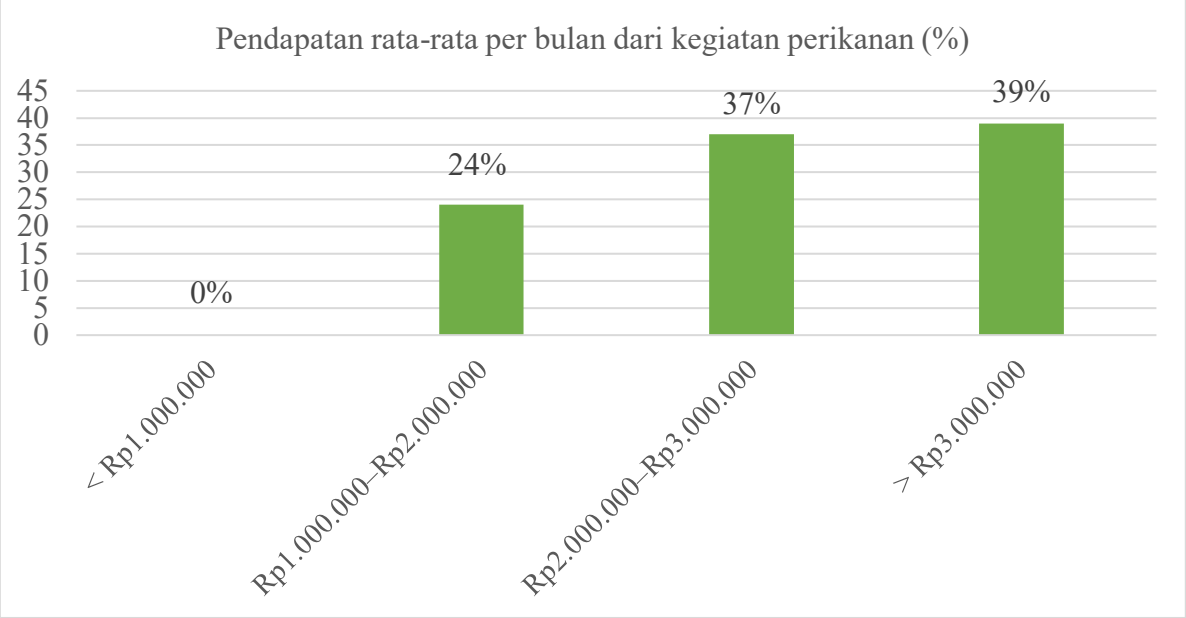

Figure 10. Average Monthly Income from Fishing Activities (%)

Source: Processed Primary Data, 2025

The distribution of fishermen's income in Lake Sentani, Jayapura Regency, shows that the majority of fishermen earn relatively low monthly incomes: approximately 37% earn between Rp1,000,000 and Rp2,000,000, 39% earn between Rp2,000,000 and Rp3,000,000, and approximately 24% earn below Rp1,000,000. This relatively low income is a major challenge in improving the welfare of fishermen in the area.

This condition is reflected in several studies showing that although Lake Sentani has quite large fisheries potential with significant economic value, fishermen's income is not optimal due to various obstacles such as limited fishing equipment, less than optimal market access, and limited technological and capital support (Jayapura Regency Maritime Affairs and Fisheries Service, 2023) [23].

The importance of programs to increase income and efficiency of fishing businesses has been highlighted in various studies, which emphasize the need to develop supporting facilities such as cold storage and fish auction facilities, provide assistance in accessing financing, and provide business management training that can improve productivity and catch quality [21]. Furthermore, strengthening partnerships with the private sector and utilizing digital marketing technology are also recommended as efforts to expand markets and increase the added value of fishery products.

Therefore, increasing the income of fishermen in Lake Sentani requires an integrated approach that not only focuses on increasing catches but also on the efficiency of the fisheries value chain, access to capital, business management training, and market development so that the welfare of fishing communities can be improved sustainably.

3.2 Analysis of Factors Affecting Fishermen's Welfare

Analyzing factors influencing fishermen's welfare using multiple regression is a statistical method used to examine the simultaneous relationship between several independent variables and the dependent variable, namely the level of fishermen's welfare. This method helps identify socioeconomic and business variables that significantly contribute to determining fishermen's welfare.

Multiple regression analysis results from various studies indicate that education level, age of fishermen, length of fishing experience, business capital, income, consumption expenditure, housing conditions, and access to social facilities such as health and education all have varying influences on fishermen's welfare. Furthermore, variables such as housing conditions and welfare-supporting facilities, such as access to clean water, electricity, sanitation, and health services, also show a significant positive influence. Similarly, sound financial planning and capital management are key factors in maintaining and improving fishermen's long-term welfare.

Multiple regression analysis provides a comprehensive picture that shows that fisher welfare is not influenced by a single factor, but rather the result of a complex interaction of several variables related to socioeconomic conditions, business capacity, and access to adequate resources and social services. These findings provide an important basis for policymakers and fisher empowerment programs to focus on aspects that have the greatest impact on improving welfare.

3.3 Research Instrument Testing

1. Validity and Reliability Test Results

a. Validity Test Results

Validity tests are used to measure the validity of a questionnaire. A questionnaire is said to be valid if the statements in the questionnaire are able to reveal what the questionnaire is intended to measure.[24]Validity testing is performed using Pearson correlation calculations, then calculating r from the output results. This value is then compared with the table r value. The complete validity testing can be seen in the following table:

Table 1. Validity Test Results

Variables	Processing Activities (X1)			
	Person Correlation R Count	R Table	Significance Value	Information
X1_1	0.778	0.1946	0.000	Valid
X1_2	0.761	0.1946	0.000	Valid
X1_3	0.801	0.1946	0.000	Valid
Variables	**Production Capacity & Skill (X2)**			
	Person Correlation R Count	**R Table**	**Significance Value**	**Information**
X2_1	0.848	0.1745	0.000	Valid
X2_2	0.891	0.1745	0.000	Valid
X2_3	0.844	0.1745	0.000	Valid
Variables	**Market Access & Network (X3)**			
	Person Correlation R Calculation	**R Table**	**Significance Value**	**Information**
X3_1	0.779	0.1745	0.000	Valid
X3_2	0.871	0.1745	0.000	Valid
X3_3	0.795	0.1745	0.000	Valid

Variables	Support & Business Capital (X4)			
	Person Correlation R Count	R Table	Significance Value	Information
X4_1	0.778	0.1745	0.000	Valid
X4_2	0.795	0.1745	0.000	Valid
X4_3	0.773	0.1745	0.000	Valid
Variables	**Motivation & Finance (X5)**			
	Person Correlation R Count	R Table	Significance Value	Information
X5_1	0.210	0.1745	0.407	Valid
X5_2	0.499	0.1745	0.001	Valid
X5_3	0.565	0.1745	0.023	Valid
X5_4	0.674	0.1745	0.467	Valid
X5_5	0.590	0.1745		Valid
Variables	**Fishermen's Welfare Level (Y1)**			
	Person Correlation R Count	R Table	Significance Value	Information
Y1_1	0.864	0.1745	0.407	Valid
Y1_2	0.796	0.1745	0.001	Valid
Y1_3	0.795	0.1745	0.023	Valid
Variables	**Fisheries Added Value (Y2)**			
	Person Correlation R Count	R Table	Significance Value	Information
Y2_1	0.897	0.1745	0.407	Valid
Y2_2	0.893	0.1745	0.001	Valid

Source: Processed Data (2025)

Based on Table 1 above, it shows that the calculated r value for each questionnaire item is greater than the r table value. The formula for finding the r table is n - 2 or the number of respondents (n) 90 - 2 is 88 with an alpha of 0.05, then the r table is obtained at 0.1745. Thus, the results indicate that all questionnaire items are declared valid.

b. Reliability Test Results

Reliability testing is conducted to produce consistent statement measurements. Reliability measurement is carried out by measuring only once with the SPSS 27 tool. Cronbach Alpha statistical test based on standardized items. A construct or variable is said to be reliable if it provides an SPSS output value that the variable construct provides a Cronbach Alpha value based on standardized items > 0.70 which according to [25] it can be said to be realistic as follows:

Table 2. Reliability Test Results

Variables	*Cronbach's Alpha based on standardized items*	Note
Processing Activities (X1)	0.922	Reliable
Production Capacity & Skill (X2)	0.920	Reliable
Market Access & Network (X3)	0.921	Reliable
Support & Business Capital (X4)	0.920	Reliable
Motivation & Finance (X5)	0.921	Reliable
Fishermen's Welfare Level (Y1)	0.929	Reliable
Fisheries Added Value (Y2)	0.924	Reliable

Source: Processed data, 2025.

The test results above show that the Cronbach Alpha coefficient based on standardized items is > 0.70 for all variables, so it can be concluded that the data of the studied variables is reliable.

2. Classical Assumptions

a. Normality Test Results

The normality test for the data in this study was conducted using a normal probability plot graph, observing the tendency of the data distribution towards the regression line. The results of the normal probability plot graph are shown in the following figure.

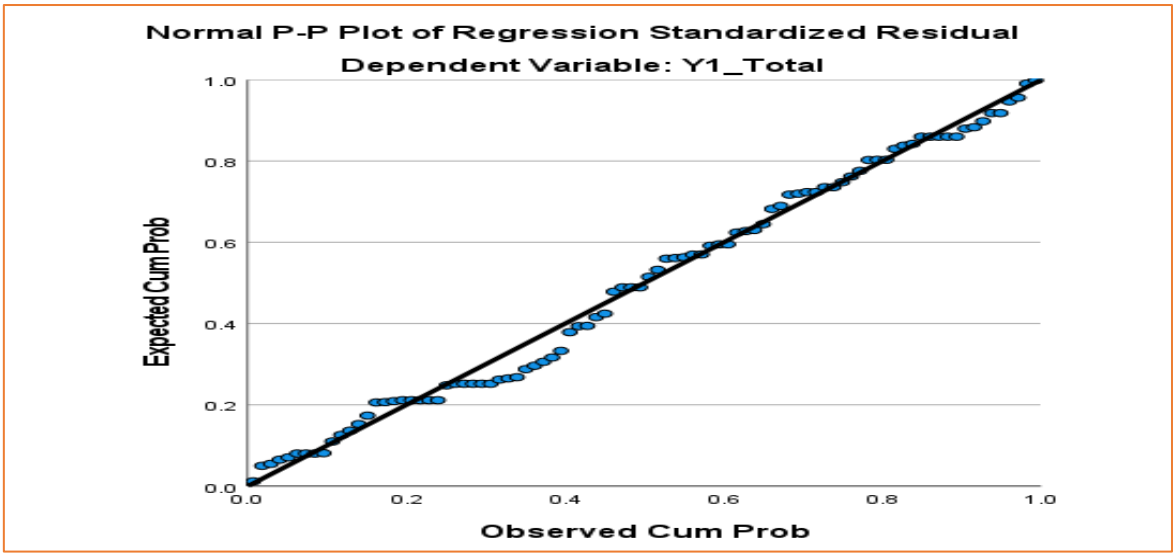

Figure 11. Normality Test Results

Source: SPSS Analysis, 2025.

ChartThe normal probability plot in Figure 4.1 shows that the data points are spread out and slightly shifted from the diagonal line and their distribution follows the direction of the diagonal line. Thus, the data distribution is acceptable but can be examined further for further research.

b. Heteroscedasticity Test Results

The purpose of the heteroscedasticity assumption is to test whether a regression model contains unequal variances from one observation to another. If the residual variance from one observation to another remains constant, it is called homoscedasticity, and if the variances differ, it is called heteroscedasticity. The heteroscedasticity test in this study is by observing the distribution of points on a scatterplot graph, the criteria of which are:

1) If there is a certain pattern, such as the existing points forming a certain regular pattern (wavy, widening then narrowing), then heteroscedasticity occurs.
2) If there is no clear pattern, and the points are spread above and below the number 0 on the Y axis, then heteroscedasticity does not occur.

A good regression model should not exhibit heteroscedasticity. The following are the results of heteroscedasticity testing using a scatterplot graph, as shown in the following figure.

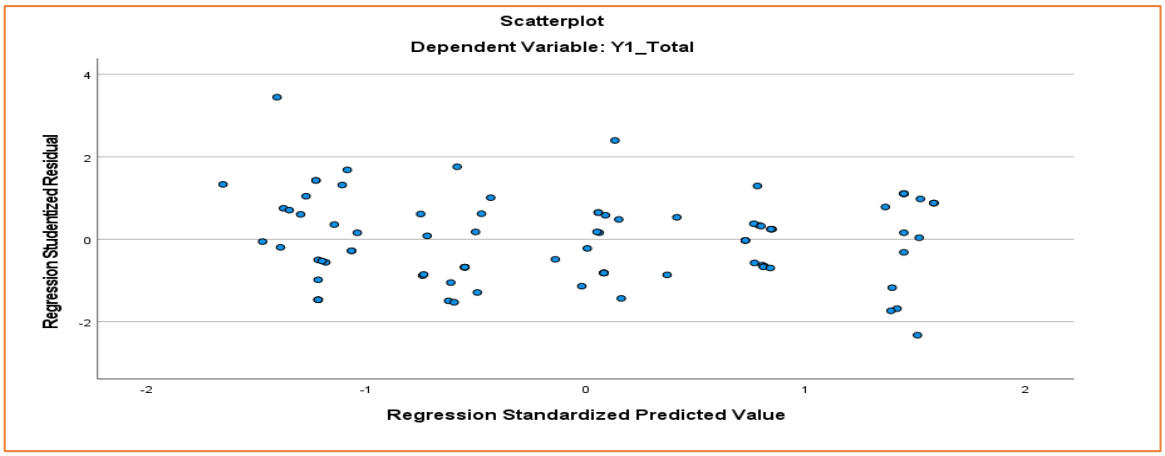

Figure 12. Results of Heteroscedasticity Test
Source: SPSS analysis, 2025

From the image above, it can be seen that the points are spread randomly and are spread both above and below the number 0 on the Y axis. This shows that there is no heteroscedasticity in this research model, so the model meets the requirements to continue to the next test.

c. Multicollinearity Test Results

Multicollinearity means there is a perfect or definite relationship between some or all of the variables explaining the regression line. A good regression model should have no correlation between the independent variables. To detect multicollinearity, look at the Variance Inflation Factor (VIF) value. If the VIF value is greater than 10, multicollinearity is present; conversely, if the VIF value is less than 10, multicollinearity is not present. The results of the multicollinearity test are shown in the table below.

Table 3. Multicollinearity Test Results

Variables	*Tolerance*	VIF
Processing Activities (X1)	0.366	2,734
Production Capacity & Skill (X2)	0.329	3,044
Market Access & Network (X3)	0.483	2,069
Support & Business Capital (X4)	0.491	2,035
Motivation & Finance (X5)	0.800	1,249

Source: Processed Primary Data, 2025.

The results of the multicollinearity test on the independent variables indicate that there are no significant multicollinearity problems. This can be seen from the Variance Inflation Factor (VIF) values, which are all below the critical limit of 10, with the highest value of 3.044 in the Production Capacity & Skill (X2) variable. In addition, the Tolerance value for each variable is also close to 1, which indicates that the level of correlation between the independent variables is relatively low and does not interfere with the stability of the regression coefficient estimate. Thus, the regression model used in this study is quite robust and the independent variables can be considered free from multicollinearity problems, so that the results of the regression analysis can be interpreted more accurately and validly.

3.4 Data Analysis

1. Multiple Linear Regression Analysis

The data analysis technique used in an effort to answer the problem and achieve the objectives of this study is multiple linear regression statistical analysis. The purpose of partial

influence testing using multiple linear regression statistical analysis to test Processing Activities (X1), Production Capacity & Skill (X2), Market Access & Network (X3), Support & Business Capital (X4), Motivation & Finance (X5) on Fishermen's Welfare Level (Y1) and Fisheries Added Value (Y2) Multiple linear regression analysis testing was carried out with the help of SPSS Software version 27. seen in the partial influence testing table below.

Table 4. Regression Test Results

Independent Variables	Fishermen's Welfare Level (Y)		
	Unstandardized Coefficients	**t count**	**Probability (sig)**
Constant	5,325	3,215	0.02
Processing Activities (X1)	-0.271	-1,387	0.169
Production Capacity & Skill (X2)	0.275	1,382	0.171
Market Access & Network (X3)	-0.080	-0.579	0.564
Support & Business Capital (X4)	0.096	0.754	0.453
Motivation & Finance (X5)	0.409	2,748	0.800
Adjust R Square	0.733		
F count	2,084		
Sig.	0.089		

Source: Processed Primary Data, 2025

Based on the test results table above, the research regression equation can be explained as follows.

$$\mathbf{Y = 5.325 - 0.271X1 + 0.275X2 - 0.080X3 + 0.096X4 + 0.409X5}$$

Based on the multiple linear regression equation above, it can be explained that:

1) The constant value of 5.325 indicates that if all independent variables (Processing Activities, Production Capacity & Skills, Market Access & Networks, Business Support & Capital, Motivation & Finance) are zero, then the Fishermen's Welfare Level value is 5.325. This constant value is a fixed value that serves as the starting point for prediction.
2) The regression coefficient of Processing Activity (X_1) of -0.271 indicates that every one unit increase in Processing Activity will reduce the Fishermen's Welfare Level by 0.271, assuming other variables remain constant.
3) The regression coefficient of Production Capacity & Skill (X_2) of 0.275 indicates that every increase in Production Capacity & Skill by one unit will increase the Fishermen's Welfare Level by 0.275, assuming other variables remain constant.
4) The regression coefficient of Market Access & Network (X_3) of -0.080 indicates that every increase in Market Access & Network by one unit will actually reduce the Fishermen's Welfare Level by 0.080, assuming other variables remain constant.
5) The regression coefficient of Business Support & Capital (X_4) of 0.096 indicates that every increase in Business Support & Capital by one unit will increase the Fishermen's Welfare Level by 0.096, assuming other variables remain constant.
6) The regression coefficient of Motivation & Finance (X_5) of 0.409 indicates that every one unit increase in Motivation & Finance will increase the Fishermen's Welfare Level by 0.409, assuming other variables remain constant.

2. Partial Effect Test (T-Test)

The hypothesis test in this study uses a t-test with a significance level of 5%. The testing criteria are; if the calculated t> t table (df = 84, sig 5%, t table = 1.663) then the hypothesis is accepted meaning there is a partial influence of Processing Activities (X1), Production Capacity & Skills (X2), Market Access & Networks (X3), Support & Business Capital (X4), Motivation & Finance (X5) on the Level of Fishermen's Welfare (Y1) and Fisheries Added Value (Y2)

Processing Activity Variable (X_1) have valuet countas big as-1,387< 1,663 (t count<t table) with a negative direction, as well as a significance value0.169> 0.05. Thus,Ha is rejected and Ho is acceptedThis means that processing activities have a negative but insignificant effect on the level of tourist visits.

Production Capacity & Skill Variables (X_2) have valuet countas big as1,382< 1,663 (t count<t table) with a positive direction, as well as a significance value0.171> 0.05. Thus,Ha is rejected and Ho is acceptedThis means that Production Capacity & Skills have a positive but insignificant effect on the Level of Tourist Visits.

Market Access & Network Variable (X_3) have valuet countas big as-0.579< 1,663 (t count<t table) with a negative direction, as well as a significance value0.564> 0.05. Thus,Ha is rejected and Ho is acceptedThis means that Market Access & Networks have a negative but insignificant effect on the Level of Tourist Visits.

Support & Business Capital Variable (X_4) have valuet countas big as0.745< 1,663 (t count<t table) with a positive direction, as well as a significance value0.453> 0.05. Thus,Ha is rejected and Ho is acceptedThis means that Business Support & Capital have a positive but insignificant effect on the Level of Tourist Visits.

Motivation & Financial Variables (X_5) have valuet countas big as2,748> 1,663 (t count>t table) with a positive direction, as well as a significance value0.800> 0.05. Although the valuet countgreater thant table, a high significance value (> 0.05) indicates that the influence is not statistically significant on the Level of Tourist Visits.

Based on the results of the t-test, all independent variables, namely Processing Activities (X_1), Production Capacity & Skills (X_2), Market Access & Networks (X_3), Support & Business Capital (X_4), and Motivation & Finance (X_5) do not have a significant partial effect on the Level of Tourist Visits (Y) at a significance level of 5%.

This is proven by the p-value (Sig.) of all variables > 0.05, although there is a Motivation & Finance variable (X_5) which has a calculated t greater than the t table, but it is still not statistically significant because the significance value is far above 0.05.

Thus, partially there are no variables that have a significant influence on the Level of Tourist Visits, so that efforts to increase tourist visits require an approach that combines these variables simultaneously (F test) or considers other factors outside this model.

3. Coefficient of Determination

The coefficient of determination (R2) essentially measures the model's ability to explain variation in the dependent variable. A small R2 value means the independent variable's ability to explain variation in the dependent variable is very limited.

The Adjusted R2 value is 0.733 or 73.3%. This indicates that the percentage contribution of the influence of the independent variables on the dependent variable is 73.3%, or the variation of the independent variables used in the model is able to explain 73.3% of the variation in the dependent variable, while the remaining 26.7% is influenced by other variables outside this research model.

CONCLUSION

Multiple regression analysis showed that factors such as education, experience, capital, and access to facilities significantly influence fishermen's welfare. Validity and reliability tests showed all questionnaire items were valid and reliable. No independent variables were partially significant, indicating the need for a combined approach to improving fishermen's welfare.

SUGGESTION

It is recommended that the Jayapura Regency Fisheries Service increase training and coaching on business management for fishermen, particularly in diversifying income sources and adopting modern technology.

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