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The Impact of the Capture Fisheries Management Program on the Welfare Level of Fishermen

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Abstract

The study aims to assess how assistance from the capture fisheries management program has influenced the welfare of fishermen in Masohi City and Amahai sub-districts, Central Maluku Regency. Findings reveal that 20% of fishermen earned less than Rp.1 million monthly before receiving assistance, while 80% earned between Rp.1 million to Rp.5 million. Post-assistance, there was a noticeable increase in production and income, attributed to improved fishing gear, skills, and work hours. Consequently, incomes rose, with 10% earning Rp.1 million to Rp.5 million, 40% earning Rp.5 million to Rp.10 million, and 50% earning over Rp.10 million monthly. Thus, the capture fisheries management program significantly enhances fishermen's welfare.

Keywords: Capture Fisheries Management Program, Welfare Level of Fishermen.

Introduction

Indonesia, the largest archipelagic country in the world, consists of oceans and small islands. Indonesia's marine waters, which are estimated to reach 5.8 million km² or about two-thirds of Indonesia's total territory with a coastline of 81,000 km, have abundant and diverse potential fisheries and marine resources. Based on the Law of the Republic of Indonesia Number 45 of 2009 concerning Amendments to Law Number 31 of 2004 concerning Fisheries. Fishery resources are assets of economic value that can be obtained through capture and cultivation. According to Article 6 paragraph 1 of the law, fisheries management in the State Fisheries Management Area of the Republic of Indonesia (WPPNRI) is carried out to achieve optimal and sustainable benefits and ensure the preservation of fish resources. Indonesia occupies second place in producing the largest fishery products in the world after China. The capture fisheries sector plays an important role in the Indonesian economy, as can be seen from the many major actors in this sector ((Stacey et al., 2021).

Small-scale fisheries management often focuses on the fisherman's household level, with fishing using small boats (less than 5 GT in size) or without boats, as well as fishing gear operated by human labor. (Halim et al., 2019). Indonesia has more than 17,000 islands and a coastline length of 95,181 km, making it the country with the fourth longest coastline in the world. (Coventry, 2001). The number of fishermen in Indonesia reaches more than 2,755,794 people, both operating in the sea and public waters (Decree of the Minister of Maritime Affairs and Fisheries of the Republic of Indonesia Number 18 of 2011 - Kementerian Kelautan dan Perikanan RI, 2011).

In 2022, fisheries production in Indonesia reached 24.85 million tons, with contributions from capture fisheries of 7.99 million tons and aquaculture of 16.87 million tons. This figure increased by 13.63% compared to the production in 2021 which reached 21.87 million tons. Capture fisheries have an important and strategic role in the Indonesian economy, at least from three aspects: as a source of economic growth, a provider of food (especially animal protein), and a provider of employment ((Handrian & Hawa, 2022).

However, capture fisheries policy faces various complex problems. Threats to the sustainability of fish resources and the capacity of business actors are the main concerns in efforts to realize sustainable capture fisheries. The study's results show that the fishing community is one of the most vulnerable groups to poverty. This poverty is caused by

various interrelated complex factors that weaken the community's ability to develop the region and improve social welfare (Sipahelut, 2011).

Fishermen's poverty is also affected by a lack of capital and technology, low market access, and participation in natural resource management. Social factors such as high population growth, low level of education, and health, and lack of public facilities and infrastructure in coastal areas also the cause (Widayatun, 2017). The level of welfare of fishermen is largely determined by the catch that affects their income. Low catch production has a direct impact on the welfare of fishermen.

Maluku Province, as one of the archipelagic provinces, has an area of 581,376 km² consisting of 527,191 km² of ocean and 54,185 km² of land. With a potential fishery resource of 1,640,160 tons per year, Maluku is still in the fourth position of the poorest province in Indonesia. (Badan Pusat Statistik Provinsi Maluku, 2023). Central Maluku Regency, as one of the districts with the largest fishery production in Maluku, has an area of 275,907 km² with an ocean area of 264,311.43 km² (95.08%) and a land area of 11,595.57 km² (4.12%). Most of the villages in Central Maluku are located in coastal areas, with the majority of the population making a living as fishermen.

The potential of marine fisheries in Central Maluku Regency is in two Fisheries Management Areas (WPP), namely the Banda Sea WPP and the Seram Sea WPP, with a potential of 835,400 tons and the number of permissible catches (JTB) of 334,160 tons per year. In 2022, the total fishery production in Central Maluku reached 145,263.68 tons with a production value of IDR 2,593,494,476,000. This production consists of marine fisheries of 135,997.45 tons and inland fisheries of 9,286.23 tons.

However, the potential of this fishery has not been utilized optimally. The fishing fleets owned by fishermen are still mostly traditional and small-scale, with low productivity. This condition is caused by several factors: the dominance of boats without motors, the lack of fishermen's business capital, and the imbalance in the use of fishing fleets. Therefore, the development of the capture fisheries business is needed to overcome these problems and improve the balance of potential management in WPP.

Coastal communities in Central Maluku Regency, consisting of fishermen, fish farmers, processors, and traders of marine products, are highly dependent on marine and fishery resources. One of the efforts to increase fisheries production is through the Capture

Fisheries Management Program, which includes the procurement of fishing fleets for fishermen. This program is expected to increase fishermen's productivity and income.

One of the fisheries business activities that is quite developed in the hamlet of Parigi Wahai North Seram, Central Maluku is tonda fishing (hand line) for tuna fishing. The catch is generally sold in the form of fresh tuna loin. Investments that are invested should provide benefits that have an impact on business sustainability while still paying attention to resource sustainability. (Dergo Moniharapon et al., 2024).

Various previous studies have shown that fishing equipment assistance has a positive impact on fishermen's income, as seen in (Windyawati Yusuf Djaina et al., 2023) research in Bilato District, Gorontalo, and the positive impact of fishing gear such as Gill Net in Intana Putri, (2021) research in Kuala Jambi. In addition, factors such as the number of fish catches, education, age, and income also affect fishermen's income, as shown in the research of Esa & Putra, (2019) and Rizka & Andriyani, (2020). The results of this study provide a deeper understanding of income dynamics and their influencing factors on fishermen in various locations in Indonesia.

Based on the results of previous research, several potential research gaps can be identified. One of them is the lack of research that specifically explores the influence of local social and cultural factors on fishermen's income, such as traditional values or non-economic factors that may affect fishermen's income. In addition, there is the potential to further explore the impact of fishing facility assistance on the economic sustainability of fishermen in the long term, including an analysis of the sustainability of the fishing gear provided.

In the context of novelty, this study offers a new perspective on the effectiveness of the Capture Fisheries Management Program with a focus on the Central Maluku region, which has not been widely researched before. The study also integrates analysis of the latest data from 2022, providing more actual insights into the condition of fisheries in the area. The results of this study are expected to provide more comprehensive and applicable recommendations for local governments and other stakeholders in optimizing capture fisheries management programs to improve the welfare of fishermen.

Based on this background, this study aims to evaluate the impact of the Capture Fisheries Management Program on the welfare of fishermen in Masohi City and Amahai Districts, Central Maluku Regency. This study will also identify the factors that affect the

provision of the program to increase fishermen's income. The results of this study are expected to be considered by the local government of Central Maluku Regency and related agencies in optimizing the capture fisheries management program.

Theoretical Framework

Income Levels

Income levels are a key indicator in the Human Development Index (HDI), reflecting the quality of life through education, health, and the economy. Higher education facilitates access to better jobs and incomes, while poor health can hinder productivity and access to health services, reducing the quality of HDI. Income indicators include monthly income, type of job, education budget, and family burden.

Age and type of work affect income, with productivity declining after the productive period. Work experience improves skills and efficiency, as well as output and income. The commute to work also affects income, with the distance reducing work time and income. An increase in income increases the consumption of more quality goods, while the relationship between income and consumption shows an increase in income. (Adhitya Yudha Satria & Sri Wibawani, 2024).

Capture Fisheries Management Program

Fisheries resource management is not just administrative but includes strategic efforts to build and manage marine resources sustainably. This concept is emphasized in Law Number 31 of 2004 (Undang-Undang Republik Indonesia Nomor 45 Tahun 2009, 2009) Concerning Fisheries, which mandates information collection, analysis, planning, consultation, and policy implementation to optimize the benefits of fish resources for the welfare of the community (Undang-Undang Republik Indonesia Nomor 45 Tahun 2009, 2009). According to FAO, fisheries management is an integrated process that involves decision-making, resource allocation, and law enforcement to maintain the sustainability of fish production and achieve sustainable fisheries goals (Salim et al, 2024).

Geographically, Central Maluku Regency, which is dominated by sea areas and small islands, shows its economic dependence on the use of marine resources. The development of coastal areas and small islands in this area is an important focus to maximize the potential of fishery resources by the development plan. To support sustainable management, it is

important to prioritize ecosystem protection and coordination between regions to achieve the goal of inclusive and sustainable fisheries development. With the implementation of programs such as the Capture Fisheries Management Program and the Aquaculture Fisheries Management Program, the Central Maluku Regency Fisheries Service aims to increase fisheries production. Focusing on empowering smallholder fishers, infrastructure development, and capacity building is a key step in supporting the welfare of coastal communities and achieving the vision of optimal and sustainable fisheries development for this area (Dergo Moniharapon et al., 2024).

Method

This study divides the types of research into two, namely qualitative which focuses on limiting problems for in-depth understanding, and quantitative which uses numerical data from collection to interpretation. The data in this study consists of primary data collected directly through questionnaires and interviews with fishermen in Masohi and Amahai cities, as well as secondary data that already exists in the form of publications from other agencies. The sampling technique used purposive samples for all heads of fishermen's Joint Business Groups who received capture fisheries management assistance, with a total of 30 respondents from two sub-districts in Central Maluku Regency. In the context of assistance to fishing groups, selecting group leaders as the sample can provide valuable insights as they usually have a better understanding of the needs and dynamics of the group. In addition, group leaders are often considered to be good representatives of the group, so the information obtained from them can be considered to reflect the overall experience or views of the group members.

The data collection techniques in this study include observation, interviews, questionnaires, and documentation studies. Observation is carried out by directly observing the research object and making a mapping to obtain an overview of the research objectives. Interviews are used as a tool to obtain in-depth information about the main work of the fishing community in Central Maluku Regency. Meanwhile, documentation is carried out by taking pictures of research objects and subjects related to the description of the level of welfare of the fishing community.

Data analysis uses the Crosstabulation analysis technique, which presents the relationship between two or more variables in a matrix table. This crosstabulation is suitable

for qualitative or nominal variables, resulting in easily interpreted information about the relationships between variables. This method is advantageous because it facilitates data management at scale and allows categorical evaluations to uncover significant relationships between variables. This study used the Chi-Square test in Crosstab analysis, where the probability value of Chi-Square < 0.05 showed a significant relationship between the observed variables.

Discussion of Research Results

Production and Income of Fishermen

The catch or production level of fishermen based on the results of research in the field is quite varied, both in terms of the type of catch and the volume of catch, the volume of catch can be seen in the table below which presents the average production (catch) of fishermen based on the range of production and the number of fishermen.

Average Production Volume (Catch) of Fishermen

Production Range (Average one time at sea)	Amount	Presentation
0 - 10 Kg	8	27%
11 - 15 Kg	18	60%
16 - 20 Kg	4	13%
Total	30	100%

Source: Interview results, (2024)

It appears that most fishermen can produce production in the range of 11-15 kg per day, namely as many as 18 people or 60%, followed by 0-10 kg as many as 8 people or 27%, and finally 16-20 kg as many as 4 fishermen or 13%. The average hours of fishing required per day is in the range of 4-13 hours, where the frequency of fishing for each week ranges from 5-6 times a week so that in one month each fisherman can spend time at sea for an average of 204 hours.

Furthermore, the catches are marketed to several places including Fish Landing Places (TPI), traditional markets, collecting traders, to papalele (itinerant traders) in Masohi City and Amahai District and its surroundings, with selling prices ranging from Rp.25,000 to Rp.35,000 per kg. The fishermen's expenditures for one fishing trip can reach Rp.40,000,- to Rp.118,000,- consisting of fixed costs in the form of depreciation of fishing

gear and variable costs which include expenditures for fuel, consumption, bait, hooks, ice cubes, and several other supporting equipment. Based on the catch, average selling price, and fishermen's expenses, fishermen can earn a net income ranging from Rp.3,300,000 to Rp in one month. 13,968,000.

Fishermen's Production and Income in a Month

Description	Lowest	Highest	Average
Frequency at sea	16	24	22
Production (kg)	152	586	377
Price/kg (Rp)	25,000	35,000	27,700
Total Income (Rp)	4,100,000	16,800,000	10,533,506
Spending (Rp)	800,000	2,832,000	1,545,500
Net Income (Rp)	3,300,000	13,968,000	8,988,040

Source: Interview results, (2024)

Impact of Capture Fisheries Management Program on Fishermen's Income

Fishermen's Income Before and After Getting Assistance

From the interview results, it is known that after receiving assistance through the capture fisheries management program, fishermen's income has increased significantly. All respondents admitted that before receiving assistance, the average income earned was not more than Rp.5,000,000 per month, but after receiving assistance their income has increased, which on average has reached more than Rp.5,000,000 per month. As summarized in the table as follows:

Fishermen's Income Before and After Getting Assistance

Income range per month	Before		After	
	Amount	%	Amount	%
< Rp. Rp 5.000.000	30	100%	3	10%
Rp. 5.000.000 - Rp. 10.000.000	0	0%	12	40%
> Rp. 10.000.000	0	0%	15	50%
Total	30	100%	30	100%

Source: Interview results, (2024)

The table shows that before getting assistance, there were still 6 people, or 20% of fishermen who had an income of less than Rp.1 million, but after getting assistance there were no more fishermen who had income in that range. As for the income range between Rp.1,000,000 - Rp. 5,000,000 also decreased after receiving assistance, where before getting assistance there were 24 fishermen, or 80% who had income in that range, but

after getting assistance there were only 3 people, or 10% who had income in that range. In general, after receiving assistance, fishermen's income has increased, namely in the range of Rp.5 million - Rp.10 million as much as 40%, and more than Rp. 10 million as much as 50%.

The results of in-depth interviews revealed that the low-income level of fishermen before obtaining assistance was generally caused by several factors, including the equipment used at that time was still traditional, causing limited fishing ground distance along with travel time and production capabilities that were not maximized, especially in extreme weather conditions. Therefore, the fisheries assistance program in the form of fishing gear is recognized as having a significant impact on increasing the production and income of fishermen in the study area.

The results of this study are in line with research conducted by Windyawati Yusuf Djaina et al., (2023) with the title Effect of Fishing Facilities Assistance on Fishermen's Income in Bilato District, Gorontalo Regency, that the results of this study show that the income level of fishermen receiving assistance and fishermen in Bilato District is classified as very high, namely with an average of Rp 4,478,353. Fishing facilities assistance affects the income of fishermen.

Appropriateness and Impact of the Capture Fisheries Assistance Program Capture Fisheries Assistance Program on Fishermen's Income

The ability of fish catch production after the capture fisheries assistance provided to fishermen indirectly affects the needs of each fisherman. This can be seen from the respondents' answers regarding the suitability and impact of the assistance, as summarized in the table below.

Appropriateness and Impact of the Capture Fisheries Assistance Program

Capture Fisheries Assistance Program on Fishermen's Income

			Impact		Total
			Impact	No Impact	
Assistance Program	Not Suitable	Amount	0	2	2
		%	0%	100%	100%
		% of Total	0%	6,7%	6,7%
	In accordance	Amount	27	1	28
		%	96,4%	3,6%	100%
		% of Total	90%	3,3%	93,3%
Total	Amount	27	3	30	
	%	90%	10%	100%	
Pearson Chi-Square (prob)					< 0,001

Source; Results of data processing (Crosstabs) with SPSS, (2024)

The appears that of all the capture fisheries assistance programs provided, only 2 people, or 6.7% stated that the assistance programs received were not to their expectations and needs, however, there were 28 people, or 93.3% who stated that the assistance programs were by their expectations and needs. Most of them or as many as 27 people or 96.4% of the 28 people stated that the program had a significant impact on increasing their income. Only 1 person or 3.6% stated that they had not felt an optimal impact.

In general, the results of the cross-tabulation above conclude that the suitability of fishing gear has a significant impact on increasing the income of fishing communities. This can be seen from the probability chi-square value which is smaller than 0.001, which means that the suitability of the fishing gear received has a close (significant) relationship with its impact on increasing fishermen's income.

Fishermen's Production and Income

The variation in fishermen's income is inseparable from the difference in their ability to obtain catches when going to sea. However, fishermen with more catches or higher production levels generally have greater income compared to fishermen with lower production levels.

Fishermen's Production and Income

			Income			Totals
			< 5 million	5-10 million	> Rp.10 million	
Production	Low	Amount	3	11	2	16
		%	18,8%	68,8%	12,5%	100%
		% of total	10%	36,7%	6,7%	53,3%
	Tall	Amount	0	1	13	14
		%	0%	7,1%	92,9%	100%
		% of Total	0%	3,3%	43,3%	46,7%
Totals	Amount	3	12	15	30	
	%	10%	40%	50%	100%	
Pearson Chi-Square (prob)						<0.001

Source; Results of data processing (Crosstabs) with SPSS, (2024)

The table above shows that higher production tends to generate higher income. Most fishermen with higher production levels (92.9%) have incomes above Rp.10,000,000, while those with lower production levels have incomes below Rp.10,000,000, and some even have incomes below Rp.5,000,000, which is 18.8%. The probability chi-square value which is smaller than 0.001 indicates that the relationship between production and fishermen's income is very close (significant).

The results of this study are in line with research conducted by Putra & Rahaju, (2023), with the research title analysis of factors affecting the production and income of fishermen in Batunggul village, Nusa Penida sub-district, the results of the analysis found that the variable number of fish catches (production) is worth 0.000 <0.05 and the beta coefficient value of 1.003 which describes the number of fish catches has a positive and significant effect on fishermen's income. According to Agung et al (2008) defines production as the result of a process or economic activity by utilizing several inputs, and combining various outputs to produce inputs. According to Soekartawi (1987), total revenue is production multiplied by the selling price prevailing in the sales market. (Intana Putri, 2021).

Production, Income, and Fleet/Gear Type

If examined further, it can be seen that production or catch is closely related to the production factors (inputs) that form it, namely Capital, Labor, and Skill (expertise). In this study, capital is proxied by the type and size of fishing gear, labor is proxied by hours worked at sea, and skill is proxied by fishing experience.

The results of the cross-tabulation of the three variables associated with production and income are presented in Table 4.8 on the effect of fleet type/fishing gear, Table 4.9 on the effect of working hours, and Table 4.10 on fishing experience. Table 4.8 shows the production and income of fishermen associated with the type of fleet/ fishing gear used, where the greater the value and capacity of fishing gear, the greater the production that can be generated, which in turn has an impact on the income earned.

Production, Income, and Fleet/Gear Type

			Fleet/catching tool				Totals
			PS GillNet	KM 6,0	KM 1 GT	MT <3 GT	
Production	Low	Amount	2	1	12	1	16
		%	12.5%	6.3%	75.0%	6.3%	100%
		%	6.7%	3.3%	40%	3.3%	53.3%
		Totals					
	Tal	Amount	0	0	2	12	14
		%	0%	0%	14.3%	85.7%	100%
		%	0%	0%	6.7%	40%	46.7%
		Totals					
Income	<5 million	amount	2	1	0	0	3
		%	66,7%	33,3%	0%	0%	100%
		%	6,7%	3,3%	0%	0%	10%
		Totals					
	5-10 million	Amount	0	0	11	1	12
		%	0%	0%	91,7%	8,3%	100%
		%	0%	0%	36,7%	3,3%	40%
		Totals					
	>Rp.10million	Amount	0	0	3	12	15
		%	0%	0%	20%	80%	100%
		%	0%	0%	10%	40%	50%
		Totals					
Totals	Amount	2	1	14	13	30	
	%	6,7%	3,3%	46,7%	43,3%	100%	
Pearson Chi-Square (prob)						Production	0,000
						Income	0,000

Source; Results of data processing (Crosstabs) with SPSS, (2024)

The type of fishing gear received significantly affects fishermen's income. Most fishermen who received MT < 3 GT gear, valued at Rp.89,150,000 per package, produced high catches and earned over Rp.10,000,000 per month. In contrast, fishermen who received Gill Net assistance, worth Rp.2,520,000, had low catches and earned less than

Rp.5,000,000 per month. The strong link between fishing gear and income is confirmed by a chi-square probability value below 0.01. These findings align with Intana Putri, (2021) study, showing that fishing gear assistance increases catch production and revenue.

Production, Income, and Working Hours of Fishermen

The size of production and income are influenced by fishermen's working hours, which vary based on the time spent per trip and the frequency of trips per month. Fishermen are categorized as having low or high working hours, depending on whether they fall below or above the average. Cross-tabulation results show that those with higher working hours tend to achieve greater production and income.

Production, Income, and Working Hours of Fishermen

			Working Hours		Total
			Low	Tal	
Production	Low	Amount	6	10	16
		%	37,5%	62,5%	100%
		% of Total	20%	33,3%	53,3%
	Tal	Amount	1	13	14
		%	7,1%	92,9%	100%
		% of Total	3,3%	43,3%	46,7%
Income	<5 million	amount	3	0	3
		%	100%	0%	100%
		% of Total	10%	0%	10%
	5-10 million	Amount	4	8	12
		%	33,3%	66,7%	100%
		% of Total	13,3%	26,7%	40%
	>Rp.10 million	Amount	0	15	15
		%	0%	100%	100%
		% of Total	0%	50%	50%
Total	Amount		7	23	30
	%		23,3%	76,7%	100%
Pearson Chi-Square (prob)				Production	0,005
				Income	0,001

Source; Results of data processing (Crosstabs) with SPSS, (2024)

It appears that there are 14 fishermen with higher production, 13 of whom, or 92% have high working hours. The same applies to income, where out of 15 fishermen who have income above Rp.10,000,000, all of them (100%) have high working hours. And of 12 fishermen who have income in the range of Rp.5,000,000 - Rp.10,000,000 8 of them (66.7%) have high working hours, and the remaining 4 people (33.3%) have low working

hours. Meanwhile, out of 3 fishermen with the lowest income range of less than Rp.5,000,000, it turns out that all of them, or 100% have low working hours.

The probability value of Pearson chi-square for income and production, each of which is less than 0.001, shows that the relationship between working hours and the two variables, both production and income, is very close or significant. That means it can be concluded that the higher the working hours of a fisherman, the higher the level of production and income obtained by the fisherman.

According to Becker in Jayanti, (2016) the theory of time allocation known as A Theory of the Allocation of Time, reveals that all humans have a duration of time to work and other activities. The results of this study are in line with research conducted by Esa & Putra, (2019). Production and Income of Fishermen in Batununggul Village, Nusa Penida District. According to the results of the calculation, the standardized coefficient beta number is 0.253 and the probability number is 0.003 <0.05, therefore it means that H0 is not accepted and H1 is accepted.

Production, Income, and Fishing Experience

One of the factors that determines the production and income of individual fishermen is experience. Experience is the length of time (years) a fisherman has been in his profession as a fisherman. Experience reflects maturity and expertise related to the profession. Therefore, the experience variable in this study is a proxy for one of the derived production factors that theoretically influence productivity, namely skill. The results of the cross-tabulation linking experience with fishermen's production and income are presented in the table below.

Production, Income, and Fishing Experience

			Experience		Total
			Experience	No Experience	
Production		Jumlah	9	7	16
		%	56,3%	43,8%	100%
		% of Total	30%	23,3%	53,3%
	Low	Amount	14	0	14
		%	100%	0%	100%
		% of Total	46,7%	0%	46,7%
Income	<5 million	Amount	0	3	3
		%	0%	100%	100%
		% of Total	0%	10%	10%
	5-10 million	Amount	8	4	12

		Experience		Total
		Experience	No Experience	
	%	66,7%	33,3%	100%
	% of Total	26,7%	13,3%	40%
	Amount	15	0	15
	%	100%	0%	100%
	% of Total	50%	0%	50%
>Rp.10 million	Amount	23	7	30
	%	76,7%	23,3%	100%
Totals	Amount	23	7	30
	%	76,7%	23,3%	100%
<i>Pearson Chi-Square (prob)</i>			Production	0,005
			Income	0,001

Source: Results of data processing (Crosstabs) with SPSS, (2024)

The results above show that out of 14 fishermen who have a high production level, it is known that all of them (100%) are experienced fishermen. Similarly, when viewed from the income level, where 15 fishermen have the highest income range (>Rp.10,000,000), it turns out that all of them (100%) are experienced fishermen. Of 12 fishermen who have income in the range of Rp.5,000,000 - Rp.10,000,000, 8 of them (66.7%) are experienced fishermen, and the remaining 4 people (33.3%) are inexperienced fishermen. Whereas from 3 fishermen with the lowest income range of less than Rp.5,000,000, it turns out that all of them, or 100% are inexperienced fishermen.

The probability value of Pearson chi-square of less than 0.001 indicates that experience has a close or significant relationship with production and income. Arliman (2013) in Esa & Putra, (2019) explain that human capital theory or human capital quality theory is the limit of expertise, abilities, and insights possessed by humans also has an influence on production results, if someone is more skilled in their field, the greater the production results.

The results of this study are in line with research conducted by Esa & Putra, (2019) Putra (2019) with the research title Analysis of Factors Affecting the Production and Income of Fishermen in Batununggul Village, Nusa Penida District. According to the calculation results, the standardized coefficient beta number is 0.284 and the probability number is 0.071 <0.05, which means that H0 is rejected and H1 is accepted.

Discussion

The Impact of Capture Fisheries Management Program on Fishermen's Income

The results of the study show that before the assistance, the average income of fishermen was around Rp. 5,000,000 per month, but after the assistance, the income increased to an average of Rp. 8,988,040 per month. This is due to the use of more suitable fishing gear and increased working hours. The results of the interviews also showed a significant increase in fishermen's income after receiving better fishing gear assistance. Analysis using the Crosstab method showed that the suitability of fishing gear was significantly related to the increase in fishermen's income. This finding is in line with previous research that shows the positive impact of fishing gear assistance on fishermen's income in various regions. These findings are in line with the results of research; Asniwati et al., (2022) and Windyawati Yusuf Djaina et al., (2023) who stated that the assistance of capture fishery facilities has a good impact on increasing income.

Factors Affecting Fishermen's Income

Factors that have an impact on fishermen's income include the type of fleet and fishing gear used, the distance of the fishing area that can be achieved, weather conditions that allow fishing activities, as well as the experience and knowledge of fishermen in optimizing fishing time and techniques. Before receiving assistance, fishermen's income was limited due to limited fleets and fishing gear and suboptimal working hours. After receiving assistance such as more advanced boats and fishing gear, fishermen can catch fish over longer distances and in extreme weather conditions, which significantly increases their catch and income.

Conclusion

The results of the study concluded that the assistance provided to fishermen through capture fisheries management programs, such as GillNet, KM 6.0, KM 1 GT, and MT < 3 GT, significantly increased their fish catch production and income. This shows that the program not only helps in increasing fishermen's catches but also has a positive impact as an indicator of the level of welfare in the area. Fishermen who receive this assistance have diverse characteristics, including in terms of fishing experience, the type of fleet and

fishing gear used, operational costs per trip, and the number of working hours required for fishing activities, all of which directly affect their catch.

This study also illustrates that the variation in fishermen's catches shows the importance of these factors in determining their income. Different fishing experiences and skills, along with differences in the use of fleets and fishing gear, are crucial factors that affect fishermen's productivity. The implications of this increase in production and income also emphasize that the capture fisheries assistance program can be an effective instrument in improving the economic welfare of fishermen in the Masohi and Amahai City areas, Central Maluku Regency.

Suggestion

Capture fisheries management assistance programs have a significant role in improving the welfare of fishermen. For this reason, the author suggests that the government and related institutions provide targeted assistance, pay attention to the type of fleet or fishing gear that is suitable for fishermen, as well as pay attention to the stability of fish commodity prices, and increase market access for catch sharing. In addition, a deeper understanding and strengthening of fishermen's institutions (KUB) through direct intervention is needed to ensure that the assistance provided can be maximized in improving the welfare and production of fishermen sustainably.

Research Limitations and Suggestions for Further Research

Limitations of the study may include the use of a limited sample and focus on specific geographic areas, as well as limitations in measuring variables such as commodity price stability and broader socio-economic factors. For further research, it is recommended to consider more representative samples from various regions and conduct a more in-depth analysis of factors that affect fishermen's overall welfare.

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