Factors Affecting The Income Of Milk Fish Farmers In Soreang Village, Mappakasunggu Sub-District, Takalar District

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Abstract. This study aims to determine the factors that influence the income of milkfish pond farmers in Soreang Village, Mappakasunggu District, Takalar Regency. In this study there are four variables, namely income as the dependent variable and capital, productivity and land area as the independent variables. The data for this study were obtained from a questionnaire distributed to milkfish pond farmers. This type of research is quantitative with sampling using the slovin formula with a total of 52 respondents, milkfish pond farmers. Primary data were processed using SPSS 26. The results showed that: 1) Capital has a positive and significant effect on the income of milkfish pond farmers with a significant value less than 0.05 (0.013 <0.05), in Soreang Village, Mappakasunggu District, Takalar District.

Keywords: Income, Farmers, Capital, Productivity, Land Area

1. Introduction

Indonesia is known as a maritime country with the largest archipelagic country in the world with 17,499 islands covering an area of 5,180,053 km² and the fourth longest coastline in the world of 95,181 km². Indonesia's advantage as a maritime country is that it has abundant marine and fishery potential, but this potential has not been optimally exploited. One of the marine and fisheries sectors that can be explored is the fish fisheries sub-sector or milkfish ponds.

Milkfish (chanos-chanos) is one of the superior aquaculture commodities. In addition to supporting food security and nutrition, milkfish farming can be relied upon to increase the income of small and medium scale cultivators, because milkfish seeds are easy to obtain, cultivation is not too difficult, and has many enthusiasts because the price is affordable and tastes good. 1]. In Indonesia, another nickname for milkfish is sponge fish in Bugis-Makassar, while in English it is known as milkfish.

Book [2] records the total production of milkfish ponds in the Mappakasunggu sub-district of 1,372.60 tons in 2020. Soreang is a village in Mappakasunggu District, Takalar Regency, South Sulawesi. This village was founded in 2009 from the village of Patani. Mappakasunggu District has an area of 15.2 km2 and has 3 islands with a population of 9,936 people. The population of the Kelurahan is a middle to lower economic community where the majority of the population work as farmers in the capture fisheries sector because they are influenced by the conditions of the area adjacent to the beach which empties for example milkfish ponds.

Isfrizal and Rahman (2018) in[3]Villagers whose main activities are farming depend on their land. Thus the area of land owned is one indicator of the amount of income farmers receive. If the area of land increases, the income of farmers will also increase and vice versa if the area of land used is small or narrow, the income earned by farmers will also decrease because the seeds sown are less. In addition, capital is a factor that determines the amount of production and income. Lack of capital in farming will cause the use of production facilities to be limited thereby affecting production and income.

In Soreang Village, Takalar District, Mappakasunggu District, milkfish produced by milkfish cultivators is still sold in the traditional way, namely by bringing it to markets in Mappakasunggu sub-district or selling it to collectors who sell it in Makassar. Milkfish is produced and sold as is after harvest without adequate packaging, so it is less desirable and sold at a lower price. In addition, collective harvesting by groups of milkfish cultivators often results in a product surplus so that the selling price of milkfish becomes low. Even with the abundance of fish produced by the milkfish farmer groups in Soreang Village, they should have the ability to process fish, they must be able to process milkfish after harvest so that the selling price of milkfish production is stable and does not harm the pond cultivator groups.[4]

In its development it is difficult to determine the income of pond farmers. Often, pond farmers earn a lot, little or no income. This situation depends on several factors, such as the price of fish and fish diseases. Many pond keepers use the traditional pond maintenance model. Ponds have uneven inflow and outflow of water, which directly affects the quality of fish water in the pond.

The price for milkfish depends on the size and season of the fish, normal size fish costs Rp. 10,000, medium size costs Rp. 13,000 while the large size costs 15,000. During the season of scarcity of fish from the sea, the price of milkfish will increase by Rp. 2,000 – Rp. 3,000 each size. Harvesting milkfish takes 3-4 months, but if the pond contains a lot of natural food such as moss, then it only takes about 3 months more.

1.1 Formulation of the problem

Based on the background previously described, the main issues in this study are: Do capital, productivity, and land area affect the income of milkfish pond farmers in Soreang Village, Mappakasunggu District, Takalar Regency?

1.2 Research purposes

Based on the background and the formulation of the problem that has been described previously, the aims of this study are: To determine the effect of capital on the income of pond farmers in Soreang Village, Mappakasunggu District, Takalar Regency.

2. Literature Review

2.1 Income

Revenue is the total income obtained from other parties in the form of currency or in the form of goods, as well as industrial results that are nominated in currency with a number of assets at that time. Income is a person's source of income to meet their daily needs, income is also used as an indicator of development to distinguish the level of economic progress in developed and developing countries. Therefore, the size of a person's income is important to measure the economic progress of a country. Income is also the amount of goods and services

that meet the standard of social life. The income that each individual has is also known as per capita income which is a measure of economic progress or development[5].

Soekartawi (2002) in[6], states that farm income is the difference between revenue and all costs, where farm income is the multiplication between production and selling price while costs are all expenses used in a farm so the income formula can be written as follows:

$$\pi = TR - TC \tag{1}$$

Information:

π = Income
TR = Total evenue TC = Total Cost

Revenue is the result obtained from cultivating milkfish ponds (the result of production multiplied by the selling price) after deducting the total expenditure costs during one harvest process for milkfish pond cultivation. Total revenue is the total yield obtained in the milkfish cultivation business multiplied by the selling price. While the total cost is the total of fixed costs and variable costs in milkfish pond cultivation activities.

The level of income can be determined from the ability of the factors of production to produce goods and services. If the ability of the factors in production to produce goods and services is high, the greater the income generated. Income analysis is a quantity that measures the amount of pond farmers' income obtained from the harvest, after the total income is reduced by the total expenditure, it becomes income.

2.2 Production

Basically the theory of production/production function is to explain the physical relationship between input and output. While production is the transfer/transformation from input to output. In the request there is a production process[7].

The Production Function shows the nature of the relationship between the factors of production and the resulting level of production. The factors of production are also known as inputs and the amount of production is always referred to as output. The production function is always expressed in the form of a formula, namely:

$$Q = f(K,L,R,T) \tag{2}$$

Information:

Q = Total production produced by various types of production K = Capital
L = Labor

R = Natural wealth Q = Technology[8].

Production is the total physical that is obtained by producers in carrying out farming activities. In obtaining a maximum production, farmers will allocate inputs or production factors as efficiently as possible to achieve maximum profit. The principle of optimizing the use of factors of production is how to use these factors of production as efficiently as possible. In economics terminology, the notion of efficiency can be classified into three types, namely:

a. Technical efficiency, namely when the factors of production used produce maximum production.Price efficiency/allocative efficiency is when the value of a marginal product is equal to the price of the related factors of production.

b. Economic efficiency, namely when agricultural business activities achieve technical efficiency and also achieve price efficiency (Soekartawi, 2006) in[9].

Production factors are absolute in the production process, because without these factors production activities cannot be carried out. The production function describes the technology used in a company, industry or economy as a whole. In general, the production function shows that the number of goods produced depends on the number of factors of production used. Thus, production output is the dependent variable, while production factors are independent variables.

2.3 Capital

According to[10]Economists have traditionally given an important role to capital as a factor of production in the growth process. One of the main reasons for the increase in output per capita over time is the increase in the amount of capital equipment owned by workers.

Sutrisno (2007:39) in[11], "Working capital is the funds needed by the company to meet the company's daily operational needs. Such as purchasing raw materials, paying labor wages, paying debts and other payments. Capital in milkfish pond production activities can be divided into fixed capital and variable capital. The categories of fixed capital include land, buildings and machinery, while the categories of capital are not fixed, for example buying gasoline to irrigate the land in the process of preparing pond land and at the time of harvesting milkfish.

2.4 Productivity

According to Sinungan (2003: 12) in[12], in general productivity is defined as the relationship between tangible and physical results (goods or services) with actual entry. Productivity is also defined as the level of efficiency in producing goods or services. Productivity is also defined as:

a. Comparison of the size of the price for inputs and outputs.

b. The difference between the collection of expenditure and input amounts expressed in common units (units).

Each of the factors that determine productivity can be called (1) physical capital, namely workers will be more productive if they have the equipment to work, (2) human capital, namely the economist's term for the knowledge and skills that workers acquire through education, training and experience, (3) natural resources, namely natural resources are production inputs provided by nature, such as land, rivers, and mineral deposits, (4) technological knowledge, namely understanding the best way to produce goods and services[13].

2.5 Land area

The more land area used, the greater the number of fish seeds that can be spread and the amount of production that can be produced. This is because if the area of pond land is wider or increases, the income of pond farmers will increase and the opportunities that can be obtained to increase the productivity of production will also be greater. It is also necessary to pay attention to maintaining resources, especially in water media, soil fertility in order to

increase high productivity[1].

According to Mubyarto (1989) in[14]Land area as one of the factors of production which is agricultural products and has a significant contribution to pond farming. The size of a production from farming can be influenced by the area of land used.

Productive land area will help increase production yields because it helps provide natural food for milkfish in the form of moss because the majority of pond farmers in Soreang Village, Mappakasunggu District, still practice the traditional cultivation system so there is still a lack of additional feed.

2.6 Production cost

According to[8]Production costs can be defined as all expenses made by the company to obtain factors of production and raw materials that will be used to create the goods produced by the milkfish pond farmers. To calculate the total cost of milkfish pond farmers, the following formula can be used:

$$TC = TFC + TVC \qquad\qquad (3)$$

Information :

TC = Total cost

TFC = Total fixed costs TVC

= Cost changed in total.

Total fixed costs (TFC) are all costs incurred to obtain factors of production (inputs) that cannot be changed in amount, while total changing costs (TVC) are all costs incurred to obtain factors of production that can be changed in amount. Production costs are expenses for milkfish pond farmers to obtain production factors and raw materials needed in the production process.

2.7 hypothesis

Based on the background and problems described, it can be stated that: It is suspected that capital, productivity, and land area have a significant effect on the income of milkfish pond farmers in Soreang Village, Mappakasunggu District, Takalar Regency.

3. Research Methods

3.1 Types of research

This type of research is quantitative research. Quantitative research is a method that aims to create an objective picture or description of a situation using numbers, starting from data collection, interpretation of the data as well as the appearance and results.

3.2 Population and Sample

The population is the total number of research subjects from pond farmers. The population is a generalization area consisting of objects/subjects that have certain quantities and characteristics determined by the researcher to be studied and then drawn conclusions. That is

the definition of population in research[15].

The number of milkfish pond farmers in Soreang Village, Mappakasunggu District, Takalar Regency is 110 milkfish pond farmers. Determining the sample using simple random sampling, namely by using a random sampling method and the number of samples in this study was carried out using the slovin formula, which is as follows:

$$n = \frac{N}{1 + Ne^2} \tag{4}$$

$$n = \frac{110}{1 + 110 \, (0.1)^2}$$

$$n = \frac{110}{2.1}$$

n = 52.38 (rounded up to 52 milkfish pond farmers)[16].

3.3 Data collection technique

Data collection methods to be carried out in this study, namely:

    a.   Observation, namely data collection through direct observation of the research location as a complement to the data.

    b.   Questionnaires, namely data collection techniques by providing written questions to respondents to be answered.

3.4 Data Analysis Methods

The data analysis method in this study is multiple linear regression analysis to see the effect of the relationship between the independent variables (capital, productivity, and land area) on the dependent variable (income).with tools namely statistical product and service solution 26 (SPSS 26), that is:

$$Y = \beta 0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e \tag{5}$$

Information :

Y

= Income
of
milkfish
pond
farmers

X_1

= Capital

X_2 = Productivity

X_3 = Land area

β_0 = Intercepts

β_1,β_2,β_3 = Regression coefficient

e = Error term (interference error).

Hypothesis testing is used t test to determine whether each of the independent variables individually has a significant effect on the dependent variable. In other words, to find out whether each independent variable can really explain the changes that occur in the dependent variable. If t count > t table then Ho is rejected (one of the independent variables affects the dependent variable) and if t count < t table Ho is accepted (one of the independent variables does not affect the dependent variable). With a significance level used is 5%.

4. Research Results And Discussion

4.1 Variable Description

a. Income

Data from the research results regarding the income of the respondents obtained can be seen in the following table:

Table 1. Income of Milkfish Pond Farmers

		frequency	percent	Valid Percent	Cumulative Percent
Valid	1,000,000-3,000,000	28	53.8	53.8	53.8
	3,100,000-5,000,000	8	15.4	15.4	69.2
	5,100,000-7,000,000	7	13.5	13.5	82.7
	>7,000,000	9	17.3	17.3	100.0
	Total	52	100.0	100.0	

Source: Primary data after being processed in 2023

Based on the data in table 1, it shows that the highest productivity is >500 kg for 4 people at 7.7%, while the lowest productivity is 100-250 kg for 30 people at 57.7%.

b. Capital

Data from research results regarding the respondent's capital used in cultivation can be seen in the following table:

Table 2. Working Capital of Milkfish Pond Farmers

		frequency	percent	Valid Percent	Cumulative Percent
Valid	100,000-1,000,000	31	59.6	59.6	59.6
	1,100,000-2,000,000	12	23.1	23.1	82.7
	2,100,000-3,000,000	4	7.7	7.7	90.4
	>3,000,000	5	9.6	9.6	100.0
	Total	52	100.0	100.0	

Based on the data in table 2, it shows that the highest capital is > 3,000,000 with 5 people at 9.6%, while the lowest capital is 100,000-1,000,000 with 31 people at 59.6%.

c. Productivity

Data from research results regarding the productivity of respondents obtained can be seen in the following table:

Table 3. Total Productivity of Milkfish Pond Farmers

		frequency	percent	Valid Percent	Cumulative Percent
Valid	100-250 Kgs	30	57.7	57.7	57.7
	251-350 Kgs	12	23.1	23.1	80.8
	351-500 kgs	6	11.5	11.5	92.3
	>500 Kg	4	7.7	7.7	100.0
	Total	52	100.0	100.0	

Source: Primary data after being processed in 2023

Based on the data in table 3, it shows that the highest productivity is >500 kg for 4 people at 7.7%, while the lowest productivity is 100-250 kg for 30 people at 57.7%.

d. Land area

Data from the research results regarding the area of the respondent's land used can be seen in the following table:

Table 4. Area of Milkfish Pond Farmers

		Frequency	Percent	Valid percent	Cumulative percent
Valid	0.1-0.5 Ha	27	51,9	51,9	51,9
	0.6 -1.0 Ha	18	34,6	34,6	86,5
			3,8	3,8	90,4
			9,6	9,6	100,0

Based on the data in table 4, it shows that the highest land area is > 1.5 ha with 5 people at 9.6%, while the lowest land area is 0.1-0.5 ha with 27 people at 51.9%.

4.2 Results of Data Analysis

a. Multiple Linear Regression Analysis

Table 5. Multiple Linear Regression Results

Model		Unstandardized Coefficients		Standardized Coefficients	Q	Sig.	Collinearity Statistics	
		B	std. Error	Betas			tolerance	VIF
1	(Constant)	2,557	2.168		1,180	.244		
	Capital	.261	.102	.275	2,566	013	.666	1,503
	Productivity	.336	.115	.341	2,931	005	.563	1,776
	Land area	.301	.101	.336	2,991	.004	.606	1,650

Source: Primary data after being processed in 2023

Based on the results of multiple linear regression analysis in Table 5, the regression model is obtained as follows:

$$Y = 2.557 + 0.261X_1 + 0.336X_2 + 0.301X_3$$

Based on the multiple linear regression equation, the coefficient for the variable Capital (X_1) = 0.261, Productivity (X_2) = 0.336, Land Area (X_3) = 0.301, with a constant of 2.557.

b. Partial Test (T Test)

1. The Effect of Capital on the Income of Milkfish Pond Farmers

Based on the results of table 5, a significance value of 0.013 is obtained, this value is less than 0.05, while t-count (2.566) > t-table (2.010), so that it can be concluded that capital has a positive and significant effect on the income of milkfish pond farmers in Soreang Village Mappakasunggu District, Takalar Regency.

Based on data analysis and hypothesis testing, it was found that capital has a positive and significant effect on the income of milkfish pond farmers in Soreang Village, Mappakasunggu District, Takalar Regency. This proves that the higher the capital, the higher the income of milkfish pond farmers, and vice versa if the pond farmer's capital is low, the income earned by milkfish pond farmers is also low. This is in accordance with research conducted by Pezi, et.al. (2021), with the title "Factors Influencing the Income of Milkfish Pond Farmers (Chanos-Chanos) in Sungai Mas Hamlet, Sebatuan Village, Pemangkat District.

Availability of sufficient and timely capital is an important element in the processing of milkfish ponds because it is needed to meet the needs of the pond, for example seeds/fish seeds, feed/fertilizer, labor wages and the needs needed in the process of producing a milkfish pond business.

2. The Effect of Productivity on the Income of Milkfish Pond Farmers

Based on the results of table 5, a significance value of 0.005 is obtained, this value is less than 0.05. As for t-count (2,931) > t-table (2,010), it can be concluded that productivity has a positive and significant effect on the income of milkfish pond farmers in Soreang Village, Mappakasunggu District, Takalar Regency.

Based on data analysis and hypothesis testing, the results show that productivity has a positive and significant effect on the income of milkfish pond farmers in Soreang Village, Mappakasunggu District, Takalar Regency. So it can be said that with good management or processing of milkfish pond production so that the results are in accordance with the target or desire. Productivity is the result of a production process, the more production produced it will affect the income of a business.

This research is in accordance with what has been done by Rikah and Kusumaningsih (2018) with the title "Factors Affecting the Income of Salt Farmers in the Coastal Areas of Rembang Regency". High productivity affects the income of pond farmers, because the more productivity is produced, the income will also be higher.

3. The Effect of Land Area on the Income of Milkfish Pond Farmers

Based on the results of table 5, a significance value of 0.004 is obtained, this value is less than 0.05. As for t-count (2,991) > t-table (2,010), it can be concluded that land area has a positive and significant effect on the income of milkfish pond farmers in Soreang Village, Mappakasunggu District, Takalar Regency.

Based on data analysis and hypothesis testing, the results show that land area has a positive and significant effect on the income of milkfish pond farmers in Soreang Village, Mappakasunggu District, Takalar Regency. So it can be said that the wider the land used, the more milkfish seeds/seeds that can be stocked and the amount of production produced can increase income. This is in accordance with research conducted by Saipal, et.al. (2019), with the title "Factors Affecting the Income of Milkfish Pond Farmers in Salekoe Village, Malangke District, North Luwu Regency".

The large or increased area of pond land will be followed by the amount of income earned by milkfish pond farmers and the opportunity to be able to increase the productivity of production will also increase, however, resources such as water media and soil fertility must be maintained so as to produce productive and usable land. helps produce natural food in the form of moss because bandneg fish pond farmers in Soreang Village, Mappakasunggu District, Takalar Regency still use traditional cultivation so there is no additional feed.

5.   Conclusion

Based on the research results, the following conclusions can be drawn:

Capital has a positive and significant effect on the income of milkfish pond farmers in Soreang Village, Mappakasunggu District, Takalar Regency, where the t-count value (2.566) > t-table (2.010) and a significant value is obtained (0.013 <0.05). The higher the capital, the higher the income of milkfish pond farmers.

Productivity has a positive and significant effect on the income of milkfish pond farmers in Soreang Village, Mappakasunggu District, Takalar Regency, where the t-count value (2.931) > t-table (2.010) and a significant value is obtained (0.005 <0.05). The higher the level of productivity, the higher the income of milkfish pond farmers.

Land area has a positive and significant effect on the income of milkfish pond farmers in Soreang Village, Mappakasunggu District, Takalar Regency, where the t-count value (2.991) > t-table (2.010) and a significant value is obtained (0.004 <0.05). The wider the arable land used by pond farmers, the higher the income of milkfish pond farmers.

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