



Analysis of the Added Value of Otak-otak Mackerel Fish Products in Makassar City

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Article History	Abstract
Received: 13 June 2023 Revised: 23 Sept 2023 Accepted: 18 Nov 2023	<i>This research aims to analyze the added value of mackerel brain products in Makassar City. The research was carried out in June-August 2023 using a survey method and a sampling method using purposive sampling with a sample size of 10 mackerel brain producers. The data obtained was analyzed using the added value Hayami method. The research results show that the added value generated by the mackerel brain product business in Makassar City is IDR. 197,751/kg with a value-added ratio of 55.86%. Based on the added value ratio of mackerel brain products of 55.86%, with a value-added ratio greater than 50%, the added value is classified as high.</i>
CC License CC-BY-NC-SA 4.0	Keywords: Mackerel Brains, Added Value

1. Introduction

Fish has complete nutritional content, such as protein, carbohydrates, fat, vitamins and minerals. Fish are easily damaged either chemically or microbiologically, if they do not receive appropriate treatment. Therefore, efforts are needed to maintain quality by handling it properly so that the fish remains perfect or in processed form. Even by preserving and processing it, the added value of the product also increases economically (Sundari et al, 2017).

Apart from its high protein content, fish also has a high biological value, reaching 90%, has little connective tissue, generally has thick and white flesh, making it possible to make various kinds of preparations. Fish that are used commercially are generally fish that have economic value, while most of the others cannot be used optimally. For example, mackerel fish (*Scomberomorus commerson*) is a pelagic fish that is economically valuable and has a high protein content and is good for growth (Zulfiani, 2018). Mackerel fish, which physically have thick flesh, are a favorite among the Indonesian people to make various types of processed seafood, for example, the mackerel otak-otak product which has a taste that is suitable for the people because mackerel fish also has a chewy but soft texture, as well as the taste. savory ones are an added value (Salsabilla, 2018).

The production or processing process is related to the application of technology in an effort to increase production and add value to a commodity. If there is an increase in added value, commodity prices will also increase. The capture fisheries industry and fish processing industry are the core of the fisheries industry cluster because in both types of industry there is a flow of material (fish) and a value addition process (Purwaningsih, 2015).

The justification for the importance of added value includes that fish is a natural resource which is a source of livelihood for millions of people and a source of state income. Therefore, exploitation of fish resources must provide maximum economic benefits, both for the business actors and for the country. The economic benefits of fish resources are determined by the value of the fishery products produced. The higher the value of a product, the higher the economic benefits obtained. Meanwhile, the value of a product is determined by the consumer's willingness to pay, where consumers will pay more for products that meet their needs and desires (KKP Product Processing Directorate, 2014).

In today's developments, mackerel brain products are increasingly popular in every region, making this business have great potential for development. However, problems occur with the raw materials used in several business units for the production of otak-otak, no longer using mackerel fish, but using other raw materials, namely snakehead fish which are processed to produce otak-otak products. Thus, fish

processing agro-industrial activities, especially mackerel brain products, have added value compared to fresh fish alone

2. Methods

Research Location and Time

This research was carried out in Makassar City in June - August 2023. The selection of the research location was carried out purposively with the consideration that the location chosen was an area that made it possible to find out how much added value the processed otak-otak fishery product provided. mackerel fish, the product of mackerel fish brains, is a typical food from Makassar City which is usually used as a souvenir or souvenir for tourists when visiting Makassar City. So the choice of research location was very appropriate because Makassar City has producers of mackerel fish brains.

Data analysis

Analysis to determine the added value (value added) of mackerel brain products uses the following analysis:

Table 1. Calculation of Added Value Using the Hayami Method

No	Output, Input, Price	Formula
1	Production yield (kg)	A
2	Bahan Baku (Kg)	B
3	Manpower (HOK)	C
4	Conversion Factors	$A/B=M$
5	Labor Coefficient	$C/B=N$
6	Production Price (IDR/Kg)	D
7	Average Wage (IDR/HOK)	And
Reception and Benefits		
8	Raw Material Price (IDR/Kg)	F
9	Additional Ingredients (IDR/Kg)	G
10	Product Value (IDR/Kg)	$K=MxD$
11	a. Added Value (IDR/Kg)	$L=K-F-G$
	b. Value Added Ratio (%)	$H=(L/K)$
12	a. Employee Benefit (IDR/Kg)	$P=NxE$
	b. Labor Share (%)	$Q=(P/L)$
13	a. Profit (IDR/Kg)	$R=L-P$
	b. Profit Rate (%)	$I=(R/L)$
Remuneration for Production Factors		
14	Margin (IDR/Kg)	$S=K-F$
	a. Labor Income (%)	$T=(P/S)$
	b. Other Input Contributions (%)	$U=(G/S)$
	c. Employer Profit (%)	$V=(R/S)$

Calculation of Added Value Using the Hayami Method

Where, the test criteria are:

- If the added value > 50%, then the added value is said to be high
- If the added value < 50%, then the added value is said to below.

3. Results and Discussion

Added value is the increase in value of a commodity due to the functional input applied to the commodity in question. The functional input is in the form of a process of changing shape (form utility), moving a place (place utility) or storing (time utility). Added value is the difference between the value of commodities that receive treatment at a certain stage minus the value of sacrifices used during the production process. Added value is influenced by two factors, namely technical factors and economic factors. Technical factors are influenced by production capacity, amount of raw materials, and labor used. Economic factors are influenced by output prices, labor wages, raw material prices and other input prices.

Added value is obtained from the process of processing fresh fish into fishery products, namely mackerel brains. Calculation of the added value of fishery products is carried out using the hayami

method. Where in calculating added value, it is necessary to pay attention to various important components in processing, namely the cost of raw materials and other supporting costs which determine the success of the fishery product processing process. For more details, the following table presents the results of calculating added value using the Hayami method:

Table 2. Calculation of Added Value for Mackerel Otak-Otak Products Using the Hayami Method

No	Output, Input, Price	Value	Unit
1	Production Results	22,40	Kg
2	Bahan Baku	16,80	Kg
3	Workforce	3,90	COOP
4	Conversion Factors	1,33	
5	Labor Coefficient	0,23	
6	Production Price	265.500	IDR/Kg
7	Average Wage	110.000	IDR/HOK
Reception and Benefits			
8	Raw Material Price	107.500	IDR/Kg
9	Additional Ingredients	48.749	IDR/Kg
10	Product Value	354.000	IDR/Kg
11	a. Added Value	197.751	IDR/Kg
	b. Value Added Ratio	55,86	%
12	a. Employment Benefits	25.536	IDR/Kg
	b. Labor Section	12,91	%
13	a. Advantage	172.215	IDR/Kg
	b. Profit Rate	87,09	%
Remuneration for Production Factors			
14	Margin	246.500	IDR/Kg
	a. Labor Income	10,36	%
	b. Other Input Contributions	19,78	%
	c. Employer Benefits	69,86	%

The added value of fishery products is the value of fish commodities that undergo processing in production. In the processing process, added value can be defined as the difference between the value of the product and the value of raw materials and other inputs, excluding labor. This is in accordance with the statement by Sundari et al (2017) that added value is the difference between the value of commodities that receive treatment at a certain stage minus the sacrifice value (value spent) used during the production process. This is confirmed by Dzulmawan et al (2019) who state that added value and the value-added ratio are influenced by product value, raw material prices and the contribution of other inputs used in the production process.

Table 2 shows the calculation of the added value of mackerel brain products in one production. The production results produced by the mackerel fish brain product business in Makassar City in one production run were 22.4 kg of mackerel fish brains using raw materials of 16.8 kg mackerel fish. Where using 1 kg of raw material, namely mackerel fish, produces around 60 pcs of brains and 1 kg of production consists of around 45 pcs of mackerel brains. The production price for mackerel fish brains is around IDR 265,500/kg. Where the price of mackerel brain products ranges from IDR 4,000-IDR 7,000/pcs.

The conversion factor value can be calculated based on the division between the value of the output produced and the raw materials used (input). The conversion factor value for the mackerel fish brain product business in Makassar City is 1.33, obtained from the division between the production results (output) of 22.4 kg of mackerel fish brains and the raw materials (input) used of 16.8 kg mackerel. This means that everyone kilogram of mackerel fish used will produce 1.33 kg of mackerel fish brains. This is in accordance with the statement by Sa'adah et al (2023) that with a conversion factor of 1, which means that 1 kg of raw materials used produces an output of 1 kg.

The labor coefficient in the mackerel brain product business in Makassar City is obtained from the division between labor of 3.9 HOK and the raw materials (input) used of 16.8 kg of mackerel, so that the labor coefficient obtained is 0.23, which means that each worker in 1 day is able to process 0.23 kg of raw materials. In one production process, mackerel fish brains use 1-8 workers with an average wage of IDR 110,000/HOK.

The price of the raw materials used is IDR 107,500/Kg and the value of additional ingredients in one production of mackerel brains is IDR 48,749/kg. Where the additional ingredients used in the

production of mackerel brains are tapioca flour, shallots, garlic, oil, coconut, eggs, banana leaves and other additional spices.

Product value is the product of the conversion factor and the price of the product produced (output). The product value is equal to the gross receipts for every 1 kg of raw materials (input) used. The conversion factor is 1.33 multiplied by the selling price of mackerel brains of IDR. 265,500/kg so the value of the product produced from each kilogram of mackerel fish brains is IDR. 354,000, which means that every 1 kg of mackerel fish brains produced will produce IDR 354,000. From the price of raw materials, additional materials and the value of the product obtained, the added value generated by the mackerel brain product business in Makassar City is IDR. 197,751 /kg, with a resulting added value ratio of 55.86%. This value-added ratio is the same as the profit level, which means that IDR 354,000 of the product value contains 55.86% for profit. Based on the added value ratio of mackerel brain products of 55.86%, with a value-added ratio greater than 50%, the added value is classified as high. This is in accordance with the statement by Sartika et al (2022) that the concept of added value is a development of value that occurs due to the presence of functional inputs, where these functional inputs can increase the value and benefits of the commodities produced.

The amount of labor compensation received for each kilogram of mackerel fish brains is IDR. 25,536. The labor share is obtained from the percentage between labor compensation and added value. The share of labor in the mackerel brain product business in Makassar City is 12.91%.

Company profit is the difference between added value and labor, so it is considered the net added value received by the business unit. The profit obtained from the mackerel brain product business in Makassar City is IDR. 172,215 with a profit rate of 87.09%.

In the process of producing mackerel fish brains, there is also a margin of IDR. 246,500 resulting from the product value minus the price of raw materials. The greatest remuneration can be seen from the distribution of the highest margin, namely the entrepreneur's profit of 69.86%. This means that the entrepreneur's profits contribute IDR 69.86 from every IDR 100 company margin. The next margin distribution comes from the contribution of other inputs, namely 19.78% and the margin distribution for labor income is 10.36%.

4. Conclusion

Based on the results of research and data processing, it can be concluded that the added value generated by the mackerel brain product business in Makassar City is IDR. 197,751/kg with a value-added ratio of 55.86%. Based on the added value ratio of mackerel brain products of 55.86%, with a value-added ratio greater than 50%, the added value is classified as high.

Suggestion

Based on research that has been carried out on the mackerel brain product business in Makassar City, the advice given by researchers is the need to handle and provide information and training to business actors regarding the marketing of agro-industrial products, especially mackerel fish brains so that fishery products are typical of Makassar City. not only known in the local market but also able to compete in national and international markets.

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