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ANALYSIS OF COST OF GOODS PRODUCED AND VALUE-ADDED AT UMKM TEMPE "TROSOBO" TUBAN

Saidatul Fitri[1], Sri Widayanti[2*], Dita Atasa[3]
[1,2,3]University Pembangunan Nasional "Veteran" Jawa Timur, Indonesia
Email: *sriwidayanti@upnjatim.ac.id[2]*

Abstract

Soybeans are a food commodity that contains high vegetable protein and is generally used for food consumption. To meet the demand for tempeh agroindustry that uses soybeans as the primary raw material, agroindustry players increase soybean production. However, they still need to meet this demand. Therefore, the government meets this demand by importing. The research was conducted at UMKM Tempe Trosobo, located in Jl. Brawijaya, Gang Yudistira No. 641, Kebonsari, Kec. Tuban, Kab. Tuban, East Java. This study aims to calculate the cost of goods produced using the Full Costing method and analyze the added Value generated by UMKM Tempe "Trosobo" Tuban from soybean processing. The methods used are the Full Costing method and the Hayami method. The results showed that the calculation of the cost of goods produced in the temple agroindustry of Tempe Trosobo UMKM using the complete costing method was IDR 4,300/piece with the total production of tempe produced as many as 22,500 pieces, and the selling price was IDR 5,100/piece. Processing soybeans into tempeh has a value-added result of IDR 11,925 / kg of raw material or 49%, and the added Value of tempeh is classified as high.

Keywords: *Soybean, Cost of production, Value added.*

INTRODUCTION

The agroindustry plays a crucial role in the national economy. The success of agroindustry can be seen from its contribution to increasing people's income, creating jobs, replacing foreign exchange, and encouraging industrial growth, especially in rural areas. According to information from the Coordinating Ministry for Economic Affairs of the Republic of Indonesia (2021), the food and beverage processing sector became the most dominant in the third quarter of 2022, contributing 3.57%, gaining an increase compared to the same period last year which reached 3.49%. The type of agroindustry that uses soybean raw materials is the food processing industry.

East Java is a province that creates soybeans as a food crop commodity after rice and corn, including Tuban district. Sari (2019) argues that to complement the demand for tempeh agroindustry that uses soybeans as the primary raw material, agroindustry players increase soybean production but still need this demand. Therefore, the government meets this demand by importing. It is also felt by half of the people in Tuban Regency who have tempe agroindustry. One of them is UMKM Tempe Trosobo, which is a Tempe agroindustry in Tuban District. Therefore, Tempe Trosobo used imported soybeans rather than local soybeans to produce tempeh.

In measuring the cost of goods produced, the calculation made by UMKM Tempe Trosobo needs to accurately detail all factory overhead costs, for example, electricity costs, where UMKM Tempe Trosobo has not separated electricity costs at the company for production and electricity costs for households. In addition, the company still needs to detail the maintenance costs, machine maintenance, and depreciation costs for equipment and machinery. According to Purbosari (2019),

"The cost of goods manufactured includes several production costs, including direct raw materials, direct labor, and factory overhead costs, plus the stock of goods in the initial process and minus the stock of goods in the final process."

The research objectives include measuring the cost of goods produced using the Full Costing method and analyzing the added Value generated by Tempe "Trosobo" Tuban UMKM from soybean processing.

METHOD

The research location is UMKM Tempe Trosobo, located on Jl. Brawijaya, Gang Yudistira No. 641, Kebonsari, Kec. Tuban, Kab. Tuban, East Java. This research was conducted in October 2023. The data used in this study include primary data, namely observation, interviews, and documentation, and secondary data obtained through literature studies.

Data analysis was used to determine the processing of tempeh products carried out by Tempe "Trosobo" Tuban at total cost. Complete the Costing Method and the Hayami Method Value Added Analysis. The Full Costing Method includes an approach to determining the cost of goods that considers all production costs, including raw material costs, labor costs, and Overhead, without maintaining its particular behavior (Nurfitasari, 2014). However, the Hayami Method includes the calculation of added Value used to estimate the change in Value per kilogram of soybeans after treatment or the processing process.

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RESULTS AND DISCUSSION

Cost of Goods Manufactured by UMKM Tempe Trosobo Tuban

1. Raw Material Cost

Table 1. Raw Material Cost

type of raw material	Quantity (Kg)	Price Per Unit (Rp)	Total Cost (Rp)
Soybeans	5,980	Rp 11,900	Rp 71,162,000
Total			**Rp 71,162,000**

Source: Primary data processed, 2023

Soybeans used by UMKM Tempe Trosobo during production for October 2023 are 5,980 Kg at a price of Rp.11,900 / Kg, so the cost of raw materials needed is:

230 Kg / day x Rp. 11,900, - x 26 days = IDR 71,162,000

2. Direct Labor Cost

Table 2. Direct Labor Cost

Section	Number Of Daily orkers	Wages	Day	Total Cost
Manufacture	3	Rp 100.000	26 Day	Rp. 7.800.000
Packaging	4	Rp 110.000	26 Day	Rp. 11.440.000
Total				**Rp. 19.240.000**

Source: Primary data processed, 2023

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a. Manufacturing Section

The Tempe manufacturing section consists of 3 direct workers at a rate of Rp. 100,000, - / day. So, the direct labor costs for the manufacturing component where production is in 1 month, there are 26 working days. Hence, the salary wages obtained by the tempeh-making section of Trosobo amounted to 26 (working days) x Rp. 100,000, - (wages of tempeh making section employees) x 3 (number of workers in the manufacturing section) = Rp. 7,800,000, -

b. Packaging Section

The packaging section found four direct workers at a rate of Rp. 110,000,-/day. So the direct labor costs for the packaging component where production in one month there are 26 working days, so the salary wages obtained by the packaging section at Torsobo Tempe MSMEs are 26 (working days) x Rp.110,000, - (employee wages for the tempeh packaging section) x 4 (number of workers) = Rp. 11,440,000, -

3. Factory Overhead Costs

Table 3. Factory Overhead Costs

Fee Type	Nominal	Total
Depreciation Costs:		Rp 278,700
Building Depreciation Cost	Rp 62,500	
Machine Depreciation Cost	Rp 144,000	
Equipment Depreciation Cost	Rp 72,200	
Electricity Cost		Rp 237,700
Yeast Cost		Rp 179,400
Plastic Packaging Cost		Rp 3,460,000
Stamp Paper		Rp 409,000
Firewood Cost		Rp 800,000
Gasoline Cost		Rp 520,000
Total Factory Overhead Cost		**Rp 5,631,000**

Source: Primary data processed, 2023

The table above explains if the total factory overhead costs experienced for October 2023 are IDR 5,631,000 in the production of trosobo tempeh. The total cost is the sum of depreciation of building costs, depreciation of machinery costs, depreciation of equipment costs, electricity costs, yeast costs, packaging plastic costs, stamp paper, firewood costs, and grinding machine costs.

The following is the calculation of the cost of goods produced according to the complete costing method:

Table 4. Calculation of Cost of Goods Manufactured

Fee Type	Total Cost
Raw Materials	Rp 71,162,000
Direct Labor	Rp 19,240,000
Factory Overhead	Rp 5,631,000
Total production cost	Rp 96,033,000
Quantity of Tempeh produced	22,500 piece
Tempeh Product Cost piece	Rp 4,300

Source: Primary data processed, 2023

The profit expected by the owner of UMKM Tempe Trosobo is 15%. As the determination of the selling price of tempeh products in the cost plus pricing method through the cost of production that has been authorized using the full costing method:

Selling price = Total cost + Margin (% profit)

= Rp 96,033,000 + (Rp 96,033,000 x 15 %)

= Rp 96,033,000 + Rp 14,404, 950

= Rp 110,437,950

Selling price for piece = $\frac{\text{selling price}}{\text{total production}}$

= $\frac{\text{Rp 110,437,950}}{\text{22,500 pieces}}$

= Rp5,100/pieces.

Value-added of Tempe Agroindustry UMKM Tempe Trosobo

1. Gross Income or Revenue

Table 5. Gross Income or Revenue

Tempeh Output (Piece)	**Output Price of Tempeh (Piece)**	**Admission (Rp)**
870	Rp 5,000	Rp 4,350,000

Source: Primary data processed, 2023

The data in the previous table explained that Trosobo Tempe MSMEs produced 870 pieces of tempeh, the output of which was obtained from using 230 kg of soybean raw materials in one tempeh production process. At the same time, the selling price of tempeh set during the research was IDR 5,000/piece. So, the revenue received by the UMKM Tempe Trosobo temple agroindustry is IDR 4,350,000. The revenue obtained by the Tempe agroindustry is quite significant because other costs have remained relatively high during the Tempe production process.

2. Net Income or Profit

Table 6. Net Income or Profit

Variable	**Cost (Rp)**
Fixed Cost	Rp 70,700
Variable Cost	Rp 1,386,000
Total Cost	**Rp 1,456,700**

Source: Primary data processed, 2023

The data in the previous table explained that the total production costs incurred by Tempe Trosobo amounted to IDR 1,456,700 where the results were found through the results of the personalization of fixed costs of IDR 70,700 which includes the cost of depreciation of equipment as well as variable costs of IDR 1,356,000, which include raw material costs, overhead costs, and direct labor wages in one tempeh production process.

Table 7. Total Net Income

Variable	Cost (Rp)
Gross Revenue	Rp 4,350,000
Total Production Cost	Rp 1,456,700
Net Income	**Rp 2,893,300**

Source: Primary data processed, 2023

Based on the calculations in the table, the net income or profit received by the Tempe UMKM Tempe Trosobo agroindustry is IDR 2,893,300 per 230kg of soybean raw materials used. The calculation is obtained from the deduction of gross income (revenue) of Rp 4,350,000 from the total production cost of Rp 1,456,700. Therefore, it is concluded that processing soybeans as tempeh tangible goods is considered the most profitable.

Table 8. Value-Added Analysis of Tempeh

Nu.	Variable	Formula	Rate
I.	**Output, Input, and Price**		
1.	Output (piece/production)	a	870
2.	Raw material input (kg/production)	b	230
3.	Labor input (HOK/production)	c	7
4.	Conversion factor	d = a/b	4,782
5.	Labor coefficient	e = c/b	0,030
6.	Output price (Rp/piece)	f	5.000
7.	Average wages of labor (Rp/HOK)	g	105,714
II.	**Revenue and Profits**		
8.	Price of raw materials (Rp/kg)	h	11.900
9.	Other input contribution (Rp/kg materials)	i	84,7
10.	Output value (Rp/kg materials)	j = d×f	23.910
11.	a. Value added (Rp/kg materials)	k = j-i-h	11.925
	b. Value Added Ratio (%)	l = (k/j)%	49,%
12.	a. Labor remuneration (Rp/kg materials)	m = e×g	3.171
	b. Employment share (%)	n = (m/k)%	26%
13.	a. Advantage (Rp/kg materials)	o = k-m	8.754
	b. Rate of Profit (%)	p = (o/j)%	37%
III.	**The factor of Production Owner's Fees**		
	Margin (Rp/kg materials)	q = j-h	12.010
	a. Labor income (%)	r = (m/q)%	26%
	b. Other input contribution (%)	s = (i/q)%	1,8%
	c. Company owner's profit (%)	t = (o/q)%	72%

a. Input, Output, and Price

The amount of raw material input in the form of soybeans used is 230 kg, creating output in the form of tempeh of as many as 870 pieces with a size of 13 cm x 15 cm.

The labor input of UMKM Tempe Trosobo requires as many as seven workers at average working hours, including 8 hours/day. The labor used in the tempeh production process is three workers cooking soybeans and four wrapping tempeh.

The conversion factor is obtained from the quotient of the total output on the total input of raw materials. The conversion factor for the Tempe agroindustry of UMKM Tempe Trosobo obtained a result of 4.782, which means that per kilogram of soybeans processed can create as much as 4.782 or, if rounded, five pieces of tempe.

The results of the calculation of the labor coefficient obtained a value of 0.030, which means that processing one kilogram of soybeans into output in the form of tempeh requires 0.030 labor. So, if in one day, the production of tempeh uses 230 kg of soybeans, it requires a workforce of 7 people.

Tempe output is sold for Rp 5,000 / piece of tempeh. The average wage of labor in the tempeh agroindustry of UMKM Tempe Trosobo is IDR 105,714, obtained from the sum of each worker's wages separated by the total workers used.

b. Revenue and Profit

Raw material input prices tend to fluctuate with market prices and availability. At the time of the study, the cost of imported soybeans decreased by Rp11,900/kg. The contribution price of different inputs to a tempeh production process was IDR 84.7 for every kilogram of soybean used. The components measured to calculate the Value of other inputs include gasoline, firewood, electricity, and equipment depreciation costs.

The output value of Rp 23,910 is obtained by multiplying the output price of Rp 5,000 with a conversion factor 4.782. If one kilogram of soybean is processed into a product in the form of tempeh, as many as 4.782 or 5 pieces of tempeh can be produced at a product selling price of Rp 5,000 / piece of tempeh which can produce a selling value of Rp 23,910 / kg. Therefore, it is concluded that the selling value of soybeans after being processed as goods in the form of tempeh is considered more profitable than the selling value of soybeans without being processed.

The added Value found through the processing of soybeans as output in the form of tempeh is Rp 11,925 for every kilogram of soybeans. The value-added ratio found is 49%, meaning that the added Value of Rp 11,925 contributes 49% of the output value or revenue obtained by the tempeh agroindustry for one kilogram of soybeans processed. The value-added ratio has three classes: low if < 15%, medium if it ranges from 15%-40%, and high if > 40%. Therefore, it is concluded that the added Value of soybean commodities after being processed as goods in the form of tempeh is high.

Labor remuneration is the income workers earn for each kilogram of soybean raw material processed as tempeh output, IDR 3,171, at a worker-share ratio of 26%.

The profit received by the tempeh agroindustry of UMKM Tempe Trosobo per kilogram of soybean raw material processed is IDR 8,754, with a profit rate of 37%.

c. Cost of production factor services

According to the value-added analysis, the margin obtained due to the difference between the Value of output at the price of raw material inputs is Rp12,010 per kilogram of soybeans used. The most approved percentage of compensation from the owner of the trosobo tempeh agroindustry is 72%, then workers are 26%, and other input contributions are 1.8%. Hence, soybean processing for the tempeh agroindustry UMKM Tempe Trosobo has the potential to be feasible to continue to be developed because it has added Value and increased profits.

CONCLUSION

Based on the results and discussion that refer to the research objectives, conclusions such as:

1. The calculation of the cost of goods produced in the tempeh agroindustry UMKM Tempe Trosobo using the complete costing method is IDR 4,300 / piece with the total production of tempeh produced as many as 22,500 pieces, and the selling price is IDR 5,100 / piece.
2. UMKM Tempe Trosobo, in processing soybeans into tempeh, has an added value of Rp11,925 / kg of raw materials, or 49%. Thus, the added Value of soybean commodities after being processed as tempe tangible goods is high.

Based on the research that has been carried out, the authors suggest that the Tempe UMKM Tempe Trosobo Agroindustry should be more detailed in making calculations, accurate and more thorough in all factory overhead costs because, according to the research conducted, the company has not charged factory overhead costs for the calculation of the cost of goods produced.

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