



ANALYSIS OF VALUE ADDED AND MARKETING OF PROCESSED CASSAVA PRODUCTS IN SUCI RIVER FARMER GROUP IN PASAR PEDATI VILLAGE BENGKULU CENTRAL

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ABSTRACT

This study aims to see how much added value and analysis of the marketing system for processed cassava products, analyze marketing (product distribution, marketing channels, producer's share) for processed cassava products by the Sungai Suci farmer group in Pasar Pedati Village, Central Bengkulu Regency and how the marketing system for processed cassava in the Sungai Suci farmer group in Pasar Village Central Bengkulu Carrier. The method of data analysis in this research is quantitative and descriptive analysis.

The results of the value added obtained from the processing of cassava opak is IDR 3,953/Kg with an added value ratio of 53%. The added value obtained from processing rengginang sweet potato in one kilogram is IDR 4,703/Kg with a ratio of 59%. The added value obtained from processing mocaf flour in one kilogram is IDR 2,441/Kg with a ratio of 49%.

To find out the marketing system for the three processed cassava products, namely (opaque, rengginang, mocaf flour) calculations were carried out using marketing channel analysis, margins, and producer's share. There are two marketing channels, namely: producers (farmer groups) – end consumers (opaque, rengginang, mocaf flour), farmer group producers) – retailers) – consumers (opaque and rengginang). The value of the marketing margin and profit margin obtained is the same as that of channel I (opaque and rengginang) which are IDR 5,000/Kg and IDR 4,013/Kg. the value of the producer's share of marketing I processed opaque and rengginang is Rp 83.33% and 80.00%.

INTRODUCTION

The agricultural sector is one sector that influences economic growth and development in Indonesia. The agricultural sector in Indonesia is broadly grouped into 5 (five) sub-sectors, namely: the plantation, food crops, livestock, forestry, and fisheries sub-sectors (Suharto, 2020). The food crops sub-sector is the most important activity to carry out, and this is because food crop commodities are the staple food in Indonesia, such as rice, sweet potatoes, soybeans, and cassava. In addition, food crop commodities are also often used as raw materials for processed food products (Tuminem *et al.*, 2018). One reason that makes the agricultural sector a driver of the economy is Indonesia's natural conditions that support most of its people to work as farmers. This is what makes Indonesia known as an agricultural country (Hidayat *et al.*, 2021).

Activities in the food crops sub-sector are the most important activities carried out in Indonesia because commodities in food crops are the staple food in Indonesia, such as rice, corn, cassava, sweet potatoes, and soybeans. In addition, commodities in food crops are also often used as raw materials or inputs in processed food products. (Tuminem *et al.*, 2018). Besides reducing the risk of damage, processing can generate added value through increased prices for processed products made from cassava (Rangkuti, 2015).

Cassava is a staple food besides corn and rice, easily found in almost all parts of Indonesia. Cassava has similar properties as other agricultural products; namely, it is easily damaged, so cassava needs processing. Processing can change agricultural products quickly damaged into products with a long shelf life (Ishak *et al.*, 2017). One of the goals of a processing business is to develop food ingredients and produce added value to these products. Some processed cassava products that can generate added value include mocaf, rengginang cassava, and cassava opak. To become a processed product, several ways can be done, namely using simple and modern methods, and this processing can also be done individually or in groups. (Indrayana *et al.*, 2018). Mocaf (Modified Cassava Flour) is a processed product made from cassava. The main principle in making mocaf is fermentation in cassava; this fermentation creates an increase in the characteristics of the resulting flour so that it becomes easily soluble, whiter in color, and has no odor (Nurdin, 2018). According to Rasoki *et al.* (2021), in processing mocaf, several processes must be passed: cassava sorting, mastering, washing, slicing or cutting, soaking, drying in the sun, grinding, and sifting. Mocaf, or Modified Cassava Flour, is a modified cassava product that goes through a fermentation process to become flour. The fermentation process will change the characteristics of the mocaf so that the benefits of this product will be more varied or broad (Asmoro, 2021). The mocaf fermentation process uses several species of lactic acid bacteria, the lactic acid bacteria used include *Lactobacillus plantarum* (Noor *et al.*, 2018) and *Lactobacillus casei* (Darmawan *et al.*, 2013).

Rengginang Ubi is a processed product that resembles crackers made from cassava. Traditionally, making cassava rengginang includes peeling the cassava skin, washing, grating, separating fiber and starch, mixing spices, printing, and drying. Currently, with advances in cassava production technology, it can be done by fermentation to create good taste and texture (Seni, 2018). Opak Ubi is a cracker-like snack made from steamed cassava and then mashed as raw material. Making cassava opak starts with mastering the tuber skin, washing, steaming, pounding, making opak sheets, drying, and packaging. (Kurniasari *et al*, 2016).

The Sungai Suci Farmer Group is a collection of several cassava farmers. This farmer group has 24 members and was established in 2008. The activities of this farmer group carry out business development from cassava cultivation to processed products such as mocaf, opak, and rengginang. The business of processing cassava products carried out by the Sungai Suci farmer group is a good business prospect for members to increase the added value of cassava products and business income. The increase in added value and business income must be balanced with the selection of good marketing channels. The aims of this study are: (1) to analyze the added value of cassava and (2) to analyze the marketing of processed cassava products.

RESEARCH METHODS

This study was conducted in Pasar Pedati Village, Pondok Kelapa District, Central Bengkulu Regency. The research location was determined based on a purposive method which was determined deliberately.

Method of Collecting Data

The number of respondents was determined using the saturated or census sampling method. As many as 24 people could provide information about the added value of processed cassava products. The technique of determining the sample for analyzing the marketing of processed products uses the Snowball method. Sugiyono (2012), Snowball sampling is a technique of determining a sample size from small to large by finding a sample that meets the criteria for collecting data, then asking for samples to nominate other sample candidates.

The snowball sampling technique is used to solve problems in the marketing system, namely determining retailers for processed cassava products. Primary data is one type of data used in this study obtained through direct interviews with respondents based on a questionnaire that has been prepared.

Data Analysis Method

1. Value Added Analysis

The value-added analysis is the final value of a product that has undergone processing minus the cost of raw materials and other input costs excluding raw materials Hayami *et al.*, (1987). To calculate the added value of processed cassava products in this study, the table for determining added value was used according to Hayami *et al.* (1987).

Hayami method added value analysis is a method that estimates changes in the value of raw materials after receiving treatment. The added value in the processing process is the difference between the production value and the cost of raw materials and other inputs. The basis for calculating added value analysis is per kg of yield, the standard price used for inputs/raw materials and production at the producer level (Suprianto & Saripudin, 2021)

Table 1. Value-added analysis method calculation table

No	Details	Notation
	Output, Input, and Price	
1.	Raw Material Input (kgs/production process)	(1)
2.	Output (kgs/production process)	(2)
3.	Labour Input (HOK/ production process)	(3)
4.	Conversion Factors	(1) / (2)
5.	Labor Coefficient	(3) / (2)
6.	Product Prices (IDR/kgs)	(6)
7.	Wages (Rp/HOK)	(7)
	Income and Profit (IDR/kgs)	
8.	Input Price (raw materials)	(8)
9.	Other Inputs	(9)
10.	Product Value	(4) x (6)
11.	Added-Value (Added Value Ratio %)	(10) - (8) - (9) (11) / (10)
12.	Labour Income (Labour Ratio income (%))	(5) x (7) (12) / (11)
13.	Owner Profit Profit rate (%)	(11) - (12) (13) / (10)

Source: Hayami, dkk, (1987)

2. Marketing Analysis

To analyze the marketing system of processed cassava products, including Marketing channels, marketing margins, and producers' share. In analyzing the marketing channels of processed cassava products, a descriptive method is used to describe the condition or condition of the marketing channels and the marketing agencies that play a role (Retailers) with end consumers. To analyze the number of marketing margins with producers share using calculations (Azzaino, 1982).

To find out the size of the marketing margin, use the formula:

$$MP = Pr - Pp$$

Information:

MP = Marketing Margin (IDR/kgs)

Pr = Retail Price (IDR/kgs)

Pp = Consumer Product Price (IDR/kgs)

In the marketing margin, there are two components, namely marketing costs and profits, so costs and profits will determine the size of the marketing margin:

$$MP = \pi + Bp$$

Information:

MP = Marketing Margin (IDR/kgs)

π = Retail Profit (IDR/kgs)

Bp = Total Marketing Cost

To find out the share of prices received by producers (Producers Share) is calculated using the formula:

$$PS = \frac{Pp}{Pr} + 100\%$$

Information:

PS = Producer Price Share

Pp = Producer Price

Pr = Retail Price

RESULTS AND DISCUSSION

Characteristics of Farmer Group Members

The results of the study show that the average age of the members of the cassava farmer group is 52 years; this means that the average age of the members of the farmer group is classified as unproductive age. The average level of education for each member of the cassava farmer group with a length of education of seven years. This indicates that members of the cassava farmer group have only completed elementary school education. The low level of formal education is due to parents' economic limitations, besides that most of their parents think that in order to manage a business in the agricultural sector, it is not necessary to be equipped with a high formal educational background but rather to develop skills in the agricultural sector.

The average number of dependents owned by cassava farmer group members is four people. The number of family dependents will affect the size of the expenses to meet family needs. With a family of four dependents, it is quite large, so household expenses to meet the necessities of life are quite large. This relatively large subsistence need will also encourage or stimulate and affect the level of motivation of the cassava farmer group members to work more actively in cassava processing.

Characteristics of Processed Cassava Product Marketing Institutions

The results showed that the average age of retailers is 45 years, meaning that this age is categorized as a productive age. The age level of productive retailers will influence retailers to add a wider marketing network because age will be closely related to the physical condition and higher morale. The elementary school education level owns the formal education level of the retailer. Educational factors are closely related to mindset, attitude, action, innovation development, and decision-making. The low formal education retailers possess is offset by long trading experience. Then it will be easier to absorb innovation and make the right decisions.

The number of family dependents owned by retailers of processed cassava products is four people, which is quite large. A large number of family dependents will encourage retailers to be motivated and work more enthusiastically so they can meet family needs. This situation is shown by the efforts of retailers to sell products to the surprised market of Pematang Gubernur, Bengkulu, so that more income is obtained to meet family needs.

Analysis of Added Value of Processed Cassava Products from Sungai Suci Farmers Group

Analysis of added value in the processing of cassava products (opak, rengginang, mocaf). It was carried out using the method proposed by Hayami *et al.* (1987). The calculation method is based on the unit of raw material used in the processing. Analysis of added value is the added value from the processing of cassava into its derivative products, causing the selling price of processed products to be higher than that of fresh cassava. The results of calculating the added value of processed opak, rengginang, and mocaf products for the Sungai Suci farmer group are presented in Table 2.

Table 2 shows cassava raw materials for opak production of 120 kg, rengginang 110 kg, and mocaf 120 kg. From one production time, it produces an output of 36 Kg of opak, 44 Kg of rengginang, and 40 Kg of mocaf. The selling price of the three processed cassava products during the research was IDR 25,000/Kg (opak), IDR 20,000/Kg (rengginang), and IDR 15,000/Kg (mocaf).

The added value obtained from processing cassava into processed opak products is IDR 3,953/Kg of raw material, rengginang is IDR 4,703/Kg of raw material, and mocaf is IDR 2,441/Kg of raw material. The added value of rengginang has the greatest value acquisition from opak and mocaf products. This is because when the rengginang is dried, the weight shrinkage is less than that of other products. The size of the added value also depends on the costs incurred on the purchase price of the raw material (cassava), which is IDR 1,700/Kg. Other input contributions issued to process the three products are IDR 1,847/Kg (opak), IDR 1,597/Kg (rengginang), and IDR 859/Kg (mocaf).

Calculation of other costs results from depreciation costs for equipment, electricity, taxes, and supporting materials (garlic, salt, celery leaves, plastic packaging, and firewood).

Table 2 Added Value of Processed Cassava Products

No	Description	Notation	Opak	Rengginang	Mocaf
1.	Output, Input, and Price Output (kgs/production process)	1	36	44	40
2.	Raw Material Input (kgs/production process)	2	120	110	120
3.	Labour Input (HOK/ production process)	3	2	2	1
4.	Conversion Factors	(1)/(2)	0.30	0.40	0.33
5.	Labor Coefficient	(3)/(2)	0.02	0.018	0.01
6.	Product Prices (IDR/kgs)	6	25,000	20,000	15,000
7.	Wages (Rp/HOK)	7	50,000	50,000	50,000
	Income and Profit (IDR/kgs)				
8.	Input Price (raw materials) (IDR/kgs)	8	1,700	1,700	1,700
9.	Other Input (Rp/Kg)	9	1,847	1,597	859
10.	Product Value (Rp/Kg)	(4)x(6)	7,500	8,000	5,000
11.	Added Value (Rp/Kg)	(10)-(8)- (9)	3,953	4,703	2,441
	(Added Value Ratio (%))	(11)/(10)	53%	59%	49%
12.	Labour Income (Rp/Kg)	(5)x(7)	833	909	417
13.	Owner Profit (Rp/Kg)	(11)-(12)	3,119	3,794	2,025
	(Profit rate (%))	(13)/(10)	42%	47%	40%

Source: Processed Primary Data, 2022

From the results of this study, it can be concluded that the processing of cassava into opak, rengginang, and mocaf carried out by the Sungai Suci farmer group provides added value. To reduce damage, the processing carried out will also generate added value through increased prices for processed products made from cassava. According to Herdiyandi *et al* (2017) this study's results align with research conducted by (Hardian *et al.*, 2021), which obtained added value from opak production of IDR 3,500/Kg for one production process. Added value is obtained at IDR 4,815/Kg per production process with a ratio of 58%. A conversion factor of 0.42 with the input of raw materials used is 942/Kg with a rengginang output of 386/Kg, and a profit of IDR 3,460/Kg is obtained with a profit of 63%.

Research (Rasoki *et al.*, 2021) revealed that the added value and profit from processing mocaf was IDR 3,250 and a profit of IDR 1,583.33/Kg with an

input of 40%. Other inputs are IDR 750/Kg, while the selling price owned by the Sungai Suci farmer group is only IDR 15,000/Kg.

The category of added value calculation results according to Kipayah *et al.* (2013) if it has a ratio <15% is said to be low, added value is said to have a value of 15-40%, and added value is said to be high if it has a ratio > 40%. This is also supported by research (Nabilah, *et al.*, 2015 and Eliza, 2016). If the value-added ratio is more than 40%, the added value resulting from a production process can be categorized as high.

Analysis of the Marketing System for Processed Cassava Products by Sungai Suci Farmer Group

A marketing system analysis was conducted to determine the marketing margin distribution channel and producer share (part of the price received by producers) of processed cassava products. The marketing channels for processed cassava, renginang, and mocaf by the Sungai Suci farmer group have several marketing activities. In determining marketing channels, it is important to know the distribution of processed products first (Jamalludin *et al.*, 2019)

1. Opak Marketing Distribution Channels

The marketing distribution channel for opak products is shown in the flowchart as follows:

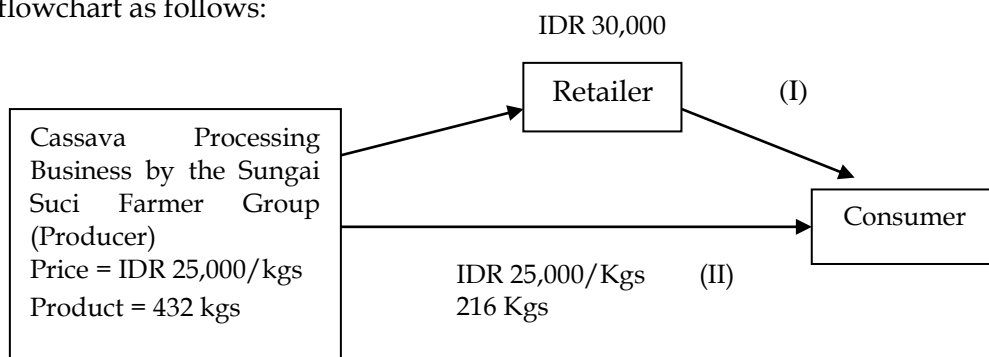


Figure 1
Opak Marketing Distribution Channels

Opak product distribution activities formed two marketing channels: a) processed products (producers) of 432 Kg → retailers 216 Kg → consumers. b). producer → consumer 216 Kg. The two forms of marketing channels have differences in the price of opak products; marketing channels through retailers are more expensive because the products will be resold to end consumers. In contrast, consumers who come directly to the producer are cheaper because the product is directly consumed.

2. Rengginang Product Marketing Distribution Channels

The rengginang product marketing distribution channel is shown in the following flowchart :

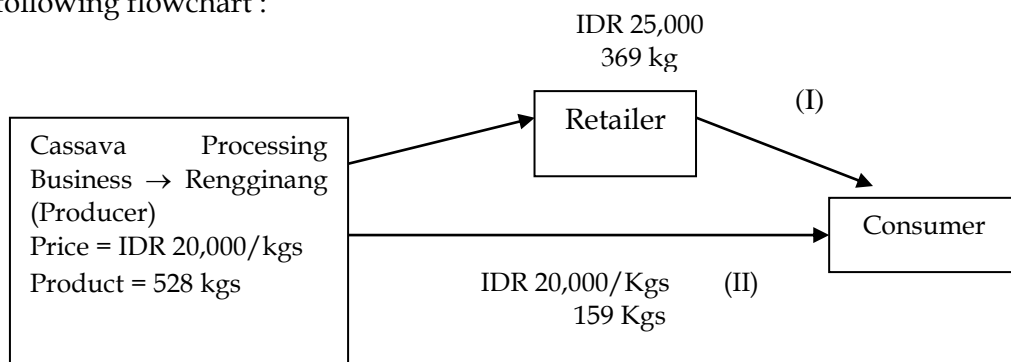


Figure 2
Rengginang Marketing Distribution Channels

70% (369 Kg) of rengginang product distribution to retailers, and about 30% (159 Kg) purchased by end consumers directly comes to producers. This is because the end consumer's interest in buying rengginang directly from the producers is less than that of opak buyers. This means that only a small proportion of consumers come directly to the producers to buy rengginang. The price of rengginang through retailers is higher because they are charged with transportation costs from the producer to the retailer's house before selling it to the consumer. The price for rengginang through retailers is IDR 25,000/Kg, while the price for the consumer directly coming to the producer is only IDR 20,000/Kg.

3. Mocaf Marketing Distribution Channel

The marketing distribution channel for mocaf products can be described as follows:

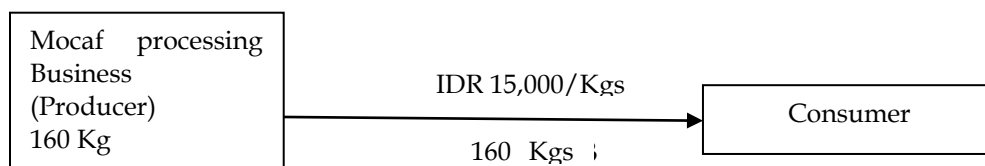


Figure 3
Mocaf Marketing Distribution Channels

The mocaf marketing distribution channel diagram shows that all mocaf production is sold to end consumers who come directly to the production site. This means that 100 percent of mocaf is marketed to end consumers. This is because mocaf has different properties than opak and rengginang products. Mocaf still requires a long processing time to become a product that can be

consumed, in contrast to opak and fried rengginang products consumed directly.

Analysis of Marketing Margins and Producer's Share of Processed Cassava Products

Marketing margin is the difference between the price at the retailer and producer levels. In the marketing margin, two components determine the size of the marketing margin, namely the cost component and the profits of the marketing agency. The amount of the price received by the producer (Producer's Share) is already the price at the marketing agency level in percentage. The results of calculating the marketing margin with the producer share of processed cassava by the Sungai Suci farmer group are presented in the table.

Table 3 Marketing Margin with Producer's Share Processed Cassava Products from the Sungai Suci Farmers Group

Marketing Channel	Marketing Institution	Buying Price (IDR/kg)	Selling Price (IDR/kg)	Cost (IDR/kgs)	Market Margin (IDR/kgs)	Producers Share (%)	Profit Margin
OPAK							
I	Producer		25,000				
	Retailer	25,000	30,000	987	5,000		4,013
	Consumer	30,000				83.33	
II	Producer		25,000				
	Consumer	25,000					
RENGGINANG							
I	Producer		20,000	987	5,000		4,013
	Retailer	20,000	25,000				
	Consumer	25,000				80.0	
II	Producer		20,000				
	Consumer	20,000					
MOCAF							
I	Producer		20,000				
	Consumer	20,000					

Source: Processed Primary Data 2022

Costs are sales or marketing costs incurred to sell goods or products to the market (Chairunnisa *et al.*, 2021). Activities carried out by marketing agencies can affect the costs incurred by marketing agencies and will ultimately affect margin costs with marketing profits.

Table 3 shows that the value of the marketing margin for opak and rengginang products is IDR 5,000/Kg. The opak margin value is obtained by calculating the difference between the price at the end consumer and the price at the producer level, namely IDR 30,000 - IDR 25,000. The value of the

marketing margin for rengginang products is obtained by calculating the difference between the price at the retailer level (Rp. 25,000) and the price at the producer level (Rp. 20,000). The marketing profit gained from selling opak and rengginang is IDR 413/Kg, obtained from reducing the initial margin value with the total marketing cost per kilogram. The equal value of the marketing margin and the marketing profit of the two products (opak and rengginang) is due to the time intensity of the retailer who directly takes it to the production house, which is twice a month with marketing costs of Rp. 987/Kg.

The results of research by Saputra *et al.* (2021) regarding analyzing the marketing channel for opak sticky rice obtained a marketing margin value of Rp. 16,000/Kg, the large margin value for opak glutinous rice is due to the high price of raw materials, buying and selling prices compared to processed opak products, and cassava rengginang.

The results showed that the selling price of opak and rengginang at the producer level was Rp. 25,000/Kg, in the channel I, the opak producers sell at IDR 25,000/Kg and sell to the consumer the same. The Producer's share percentage of opak producers received 83.33%, while for rengginang products, the share of the price received by producers was 80.0%. The research results of Aziz *et al.* (2021), analyzing the marketing of sweet potato chips, obtained values Producer's share by 70 percent, while Chairunnisa *et al.* (2021) regarding the marketing of rengginang Producer's share by 95 percent.

In research conducted by (Saputra *et al.*, 2021) regarding the analysis of the marketing channel for opak sticky rice, a margin value of Rp. 16,000/kg was obtained. This occurred because there was a difference in the selling price of opak in the study and at the Sungai Suci Farmers Group. In this comparative study, opak was sold at Rp. 50,000 and transportation costs Rp. 5,000/kg.

CONCLUSIONS AND POLICY IMPLICATIONS

Conclusions

Based on the results of a study on added value and the marketing system for processed cassava products, it can be concluded:

1. The added value of opak cassava processed products is IDR 3,953/Kg, rengginang is IDR 4,703/Kg, and mocaf is IDR 2,442/Kg.
2. The marketing system for processed cassava products has two marketing channels, namely:
 - Producer → Consumer (Opak, Rengginang, Mocaf)
 - Producer → Retailer → Consumer (Opak and Rengginang)
3. Value of marketing margins and profit margins obtained in the channel I (Opak and Rengginang), namely Rp. 5,000/Kg and Rp. 4,013/Kg with a Producer's Share value of 83.33 percent and a value of Producer's share rengginang products by 80 percent.

Suggestion

Manufacturers of processing cassava products can improve production management. In the marketing system for processed cassava products, marketing management should be able to increase market expansion (promotion).

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