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Increased value-added marning corn products

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Abstract. The glutinous corn production in South Sulawesi needs improvement in terms of economic aspects. Therefore, the added value of the corn production is very important, in which the added value represents a commodity value addition because the commodity undergoes the processing, storage, packaging, and transportation processes in the production process. The research aims at identifying the value chain related to the routine corn processing industry and calculating the added value obtained by every value chain actor. The research used qualitative and quantitative descriptive methods. The value chain actor's description was in line with Porter's theory concerning the value chain. There were the main activities and supporting activities of the value chain actors. Samples were selected using purposive sampling and snowball sampling techniques, with the monitoring points starting from the industrial actors because the value chain information source could be found out from the home industry actors. The data were analyzed using Microsoft Excel to analyze the amount of expenditure, revenue, income, and an added value obtained from every value chain actor. The research result shows that the industry which carries out the processing from the beginning obtains the higher added value ratio than the industry, which does not carry out the processing from the beginning. It is expected that the processing industry carries out the glutinous corn production starting from the beginning stage of processing.

1. Introduction

Corn is one of the leading commodities Sulawesi South; corn has the various varieties of one of the varieties of corn are cultivated for generations are local varieties of corn sticky. Glutinous corn has a high content of amylopectin and amylose low that can classify as special corn (specialty corn) specific. Excellence glutinous corn is tolerant of drought while the disadvantages of low productivity, 2.0 tons to 2.5 tons per hectare [1]. While the yellow maize productivity reached 5 - 6 tons per hectare, with local glutinous corn South Sulawesi has prospects for increasing revenue through the sale of industrial marning or direct through gusts young cobs [2].

Glutinous com production in South Sulawesi needs to be ¹⁰ eased economically. Therefore, the added value of corn products is very important where the added value is the added value of a commodity because it ¹³ undergoes processing, storage, packaging transportation in a production process. The definition of added value is the added value of a commodity because of the functional input applied to the commodity concerned [3], and it can be expected to improve income strengthen the bargaining position of farmers [4].

Activities that can increase the added value of agricultural commodities in their operations require processing costs. One concept that is often used to discuss the cost of processing agricultural products



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is value-added. By processing corn products have added value and at the same time increasing its economic value, namely by processing into processed products such as corn, but it is not yet known exactly how much profit and value-added from the processing of corn.

The process and stages through an interesting production chain and need improvement to provide maximum results so that the level of welfare of farmers and industries associated with the business can be increased. In running, the marning corn processing industry must experience various obstacles and subsequently will affect the quality. These constraints can affect the results of production and income obtained, but in addition ⁶ these constraints, there are several advantages or drivers in advancing the corn processing industry. The purpose of this study is to identify the value chain related to the marning corn processing industry and calculate the added value obtained by each value chain actor.

2. Method

2.1. Location and design

The study conducted in 4 home industries of marning corns in Makassar, Galizah Marning Corn, Alwiyah Marning Corn, Kembar Dua Marning and Cap Petani Marning Corn. Using Purposive Sampling data collection techniques because these four industries are considered able to represent the population of the corn processing industry in terms of the amount of production and processing capacity.

2.2. Population and sample

The population of this study is all of the marning corn industries in Makassar. Use the purposive sample and snowball sampling methods. Snowball sampling is a data source sampling technique that was originally only in one data source; in this case, it is the corn processing industry but has not been able to provide complete data. Sources of data other based on data obtained from the first data source data. The total sample consists of four corn processing industries, three traders, ten farmers, ten retailers. Which of these four processing industries considered the most representative of the population of the marning corn processing industries

2.3. Data Collection

Data collection is the most strategic step in research because the purpose of the research is to get data [5]. The data collection method is by observation, structured interviews with questionnaires that must be answered by respondents and tabulating data. The respondent's starting point is the marning corn processing industry. The next reference for selecting respondents is collectors and farmers related to the marning processing value chain.

²¹

2.4. Data Analysis

The data analysis process in this study began by identifying the marning corn value chain actors. And calculate the added value obtained by the marning corn processing industry. Data in an analysis using the program *Microsoft Excel* to analyze the cost, revenue, income, value-added, which acquired marning corn processing industry.

¹⁵

3. Results

3.1. Characteristics of respondents

Table 1 shows the resp²⁴ characteristics respondents in this study consisted of farmers, traders, processors, and retailers. At the level of farmers, collectors, processing industries, and retailers, the length of business is more than 10 years with a percentage of 50%, this is a good capital because with experience of doing business above 10 years is a good capital in developing, maintaining, and optimizing good business it is in the form of glutinous corn farming business and processed corns products. The level of education for the respondents of the processing industry and retailers is

relatively high, with a high educational background can understand the management and strategies to increase added value obtained both in terms of product processing and marketing of processed products.

Table 1 . Characteristics of respondents to increase value added marning corn products.

	N	%
Farmers		
Operating age (years)		
11 - 15	5	50
16-20	5	50
Last education		
SD / equivalent	4	40
Middle School / equivalent	2	20
SMA / equivalent	4	40
Collector Trader		
Operating age (years)		
10-15	1	34
16-20	2	66
Last education		
Middle School / equivalent	1	33
SMA / equivalent	1	33
D3 / equivalent	1	33
Processing Industry an		
Operating age (years)		
1 - 10	2	50
11-20	1	25
21-30	1	25
Last education		
D1	1	25
S1	1	25
S2	2	50
Retailer		
Age (years)		
10-19	2	50
20-29	4	25
30 - 39	4	25
Last education		
S1	10	100

3.2. Costs of marning corn value chain factors

Table 2 shows the total costs incurred by marning corn value chain actors. Which is where the total cost consists of the sum of variable costs and fixed costs. The total cost at the farm level is IDR. 23,975,250, with a total cost per kilogram of glutinous corn of IDR. 3,196, collecting traders IDR. 47,102,581, per kilogram program costs IDR.6,728, processing industry Rp.98,140,803 per kilogram cost of IDR. 13,085 and retailers IDR. 77,017,500 with a total cost of 27,754 per kilogram

Table 2. The cost of marning corn product value chain factor.

Cost Type	Value Chain Performers			
	Farmers	Collector Trader	Processing industry	Retailer
Number of Corn Pulses (Kilograms)	7,500	7,000	7,500	2,775

1	Variable Cost (IDR)	19,745,450	40,337,700	92,224,900	1,117,500
2	Fixed Cost (IDR)	4,229,800	6,764,881	5,915,903	75,842,500
	Total Cost (IDR)	23,975,250	47,102,581	98,140,803	77,017,500
	Total Cost Per Actor (IDR)	2,397,525	15,700,860	24,535,200	4,278,750
	Total Cost Per kilogram (IDR)	3,196	6,728	13,855	27,754

3.3. Acceptance of marning corn value chain factors

Table 3 shows the amount of revenue obtained by the marning corn value chain. Revenue to farmers amounting to IDR. 33,750,000 with a raw material of 7,500 kg of glutinous corn unit price of IDR. 4,500, collecting traders with a total revenue of IDR. 61,250,000 with a total of 7000 kg of raw materials, the processing industry of 7,500 kg of pulut corn with a total revenue of IDR. 306,817,000.

Table 3. Acceptance of marning corn product value chain factor.

Value Chain Performers	Reception		
	Production Volume	Unit Price (IDR)	Total Value (IDR)
Farmers (kg)			
Total	7,500	4,500	33,750,000
Average Per Farmer	750		3,375,000
Average Per Hectare	974		4,383,116
Average per kg	1		4,500
Collector Trader (kg)			
Total	7000		61,250,000
Average Per Tradpul Trader	2,333		20,416,666
Average per kg	1		8,750
Processing industry			
Raw materials (7500)			
a. Brainstorming	1,500	25,000	37,500,000
b. The packaging	30,468		269,317,000
Total			306,817,000
Average per Industry	1,875		76,704,250
Average per kg	1		40908
Retailer			
Total	13710		165,072,000
Average Per Reseller Trader	761		9,170,666
Average Per Pack	1		12,040

The amount of processing industry revenue is obtained from sales in bulk and in the form of packaging. At retailers with the amount of raw 2.775 kg of maize sticky with reception IDR. 165,072,000.

3.4. The income of the perpetrators is the value of marning corn

Table 4 shows the amount of income received by each marning corn value chain actor. This amount obtained from reducing the amount of revenue to the total cost of each value chain actor. Farmers with total income of IDR. 7,524,750 ,collecting traders IDR. 14,147,419, processing industry IDR. 208,676,197 and retailers IDR. 54,304,500.

Table 4 . The revenue of each marning corn product value chain factor.

Value Chain Performers	Production Volume	Receipt (IDR)	Cost (IDR)	Revenue (IDR)
Farmers				
Total	7,500	33,750,000	23,975,250	7,524,750
Average Per Farmer	750	3,375,000	2,397,525	752,475

Average Per Hectare	974	4,383,116	3,113,668	1,269,448
Average Per Kg	1	4,500	3,196	1,304
Collector Trader				
Total	7,000	61,250,000	47,102,581	14,147,419
Average Per Collector	2,333.33	20,416,666	15,700,860	4,715,806
Average Per Kg	1	8,750	6,728	2,022
Processing industry				
Total	7,500	306,817,000	98,140,803	208,676,197
Industry Average	1,875	76,704,250	24,535,200	52,169,050
Average Per Kg	1	40908	13855	27,823
Retailer				
Total (2,775kg raw material)	13710	165,072,000	110,767,500	54,304,500
Average Per P. retailer	416.66	9,170,666	6,153,750	3,016,916
Average Per Kg	1	59,485	39,916	19,569

3.5 Value added processing industry

Table 5 shows the difference in added value obtained by industries that do processing from the beginning and industries that do not process from the beginning. In the processing industry that did the processing from the beginning, it obtained an added value ratio of 71.94 % with a product price of IDR.6,500 per pack. Whereas industries that did not process from the beginning obtained a value added ratio of 69.92% with a product price of IDR. 12,000 per pack here can be seen that the added value obtained by the industry which did the processing from the beginning is very significant.

Table 5 . Value added processing industries.

Variable	The corn processing industry	
	Do not do initial processing	Perform initial processing
Output, Input and Price		
Output (bks / production)	2.000	20 00
Raw material (kg)	400	400
Labor (HOK)	6.84	9,11
Conversion factor (1/2)	5	5
Labor coefficient (3/2)	0.01	0.02
Product price (IDR / bks)	12,000	6,500
Average wage	25,000	25,000
Revenue and Benefits		
Price of raw materials (IDR / kg)	12,000	5,500
Other input contributions (IDR / kg)	6,043	3618
Output value (IDR / kg) (4x6)	60,000	32,500
a. Added value (10-9-8)	41,957	23,382
b. Value added ratio ((11a / 10) x100 %)	69.92	71.94
a. Employee benefits (5x7)	250	500
b. Labor Division ((12a / 11a) x100 %)	0.59	2.13
a. Benefits (11a-12a)	41,707	22,882
b. Profit rate ((13a / 11a) x100%)	99.40	97.86

* the difference is seen in the ratio of added value obtained

4. Discussion

In this study showed a very high increase in added value at the level of the marning corn processing industry by 71.94% in industries that did processing from the beginning and 69.92% in industries that did not do processing from the beginning. The added value obtained is more than 50%, then the added

value is said to be large and vice versa, the added value² obtained is less than 50%, then the added value is said to be small [6]. According to Hayami *et al* there are two ways to calculate added value, namely added value for processing and added value for marketing [3]. Factors that influence processing value added can be categorized into two namely technical factors and market factors [3]. The influential technical factors are production capacity, the amount of raw materials used and labor. Market factors that influence are the price of output, labor costs, prices of raw materials and the value of other inputs besides raw materials and labor. Revenue is the multiplication of production obtained with the selling price [7].

⁵ Agricultural commodities that are *perishable* (perishable) and *bulky* (Kamba) require proper handling, so that agricultural products are ready in consumption by consumers. These ⁵ behaviors include processing, packaging, controlling, and quality management to add utility to add value, so that the price of agricultural products becomes high [8]. Sources of added value can be obtained from the use of factors of production (labor, capital, natural resources and management). Therefore, to ensure that the production process continues to run effectively and efficiently, the added value created needs to be distributed fairly. The value-added analysis is a method of estimating the extent to which raw materials that are treated undergo a change in value [9]. The add³ value of the industries which carry out this initial processing can still be improved by using better packa³g. The packaging is the activity of designing and producing containers or packs as a product [10]. The packaging is the activity of designing and producing packaging or packaging for products. Usually, the main function of packaging is to maintain the product. However, now packaging is an important factor as a marketing tool [11].

The purpose of packaging is (a) Making the shelf life of foodstuffs long, (b) Saving the production of abundant foodstuffs, (c) Preventing damage to nutrition / nutrition of foodstuffs, (d) Maintaining and guaranteeing the health level of foodstuffs, (e) Facilitate the distribution/transportation of food ingredients, (f) Support the development of fast food, and (g) Increase the aesthetics and sell value of food ingredients [12].

Each value chain actor incurs variable costs and fixed costs for the production process. Cost is the value of all predictable and measurable economic sacrifices to produce a product. costs ⁴20 all the values of the factors of production used to produce a product in a given pr⁶duct period [13]. The value chain identifies and connects various strategic activities in the company. The purpose of value chain analysis is to identify the stages of the value chain where companies can increase value for custo⁹ers or to reduce costs. Cost reduction can make companies more competitive [14]. The income is gross cash inflows from economic benefits arising from the company's normal activities during one period if the inflows result in an increase in equity, which does not originate from investment contributions. The costs incurred in the marning corn processing industry are highest compared to other actors. Likewise with the income received by this marning corn processing industry. This is consistent with the opinion of Ratniati that the income earned is in accordance with the costs incurred by each value chain actor, where the higher the costs incurred, the higher the income that will be obtained by each of these actors [15].

5. Conclusion and suggestion

This study can be concluded that industries that do initial processing get a higher value-added ratio than industries that do not process from the beginning. And the income earned is higher than the actors involved in the corn marning value chain, this is in accordance with the opinion that the income earned is in accordance with the costs incurred by each value chain actor, where the higher the costs incurred, the higher income that will be obtained by each of these actors. To increase this added value can be obtained by processing from the beginning to the packaging process using better packaging so that it can increase the selling value of the product, as well as better marketing

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