

BUSINESS ANALYSIS OF NUR AINI YELLOW CASSAVA CRACKER AGROINDUSTRY IN KAMPAR REGENCY RIAU PROVINCE

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Abstract. The research aimed to: 1) describe the business profile of Nur Aini yellow cracker agroindustry and 2) analyze yellow cracker agroindustry business. The method applied in this research was case study. The results of the study show that Nur Aini yellow cracker business has been established for 29 years managed by Nur Aini and two workers in the family, the tools used in the production process are still traditional, using personal capital of IDR 3,000,000, so that Nur Aini's yellow cracker business is included in the household industry business scale. Production costs of Nur Aini's yellow crackers agroindustry has an average value of IDR 6,372,256. The highest net income of yellow crackers was obtained in December 2023 which was IDR 6,119,944. The RCR of Nur Aini's yellow cracker business is 1.82. The added value obtained on average is IDR 11,215/kg with a value-added ratio of 63%, which means that the added value of Nur Aini's yellow cracker business is in high category. The marketing efficiency value of channel I is 8.06% with a total margin of IDR 0 while channel II is 14.31% with a total margin of IDR 8,000.

Keywords: agroindustry, business, cassava, crackers, Riau

1 Introduction

The agricultural sector plays an important role in the economic progress of a country, especially an agrarian country like Indonesia. Agriculture is part of the livelihood of the Indonesian people. According to Arianti & Lestari (2019), to have added value, agricultural products must be further processed which is known as agro-industry. Processing is carried out to improve economic benefits for rural households because in general rural areas are very rich in natural commodities. Agroindustry is the activity of processing agricultural raw materials into semi- finished or finished products that are ready for consumption. This is an opportunity for the community to do further processing to obtain higher income.

Cassava plants are one of the agricultural commodities in Indonesia that are usually used as food ingredients. Cassava can be cultivated anywhere and the cultivation of cassava is very easy without doing much maintenance. The purpose of processing cassava itself is to increase the consumption period and shelf life of cassava so that it is suitable for consumption and has a high selling value in the market (Rozi & Quartina, 2019).

Kampar is one of the districts in Riau Province where most of the people make a living from agricultural products including small industry owners. Kampar Regency is one of the producers of cassava in Riau Province. In 2019, cassava production in Kampar Regency was 316.57 tons/ha and increased in 2023 to 5,485.40 tons/ha. This makes Kampar Regency the highest producing area for cassava in Riau Province and is an opportunity for agro-industry. Generally, home industry is a side business or part-time pattern of other economic activities. The household industry can develop easily because it does not require much capital, the technology used is also relatively simple and raw materials are relatively easy to access (Hakam, 2023).

Local carbohydrate-based agroindustry is very important to be developed to support food diversification and reduce dependence on imported rice. However, according to the 2020-2024 Food Diversification Road Map, some of the challenges of food diversification

are the problem of the availability of local food raw materials for the processing industry and consumption in terms of quantity, quality and continuity (Badan Pangan Nasional, 2023).

One of the agro-industrial products that has the potential to be developed is Nur Aini's yellow cassava cracker business in Pasir Sialang village. Yellow cassava crackers or better known as *kaghe* crackers in Bangkinang area is one of popular local snack due to its crisp texture, thin slices and savory taste.

Nur Aini's yellow cracker business was established in 1994, and the production process is carried out three times a week (Monday, Friday and Saturday). Nur Aini produces yellow cassava crackers using 50-100 kg of cassava in one production process, which uses a capital of IDR 544,000 and generate revenue of IDR 700,000 / production process. Raw materials are obtained from farmers at IDR 3,000 / kg. Nur Aini's yellow crackers are sold with clear mica plastic packaging that measures 20 cm x 35 cm and tied with a rubber band. The packaging does not have a logo as Nur Aini's business identity, causing the packaging to be less attractive to the market. Nur Aini's yellow crackers are marketed in Bangkinang Market (Bangkinang Kota Sub-district) and Kuok Market (Kuok Sub-district).

Nur Aini Agroindustry is facing various obstacles in running its business, such as traditional processing of yellow cassava crackers, promotions that are not yet effective because they do not have a logo and brand, and lack of support from the local government. Yellow crackers made from cassava are processed by grating them and then adding spices. The processing tools are quite simple and the ingredients are easy to obtain, consisting of cassava, garlic, turmeric, salt, and spring onions. Yellow crackers obtain its name from the color of turmeric. Yellow cassava crackers are made by grating cassava then mixing it with fine spices, then molding it into a round shape using a mold made from a used tin can and then frying it.

Based on the condition, this study aimed to determine the condition of Nur Aini's yellow crackers business which is reviewed through business history, business scale, use of labor, and business capital, then analyze Nur Aini's yellow cracker agroindustry business through the production inputs, production costs, income, business efficiency, added value, and marketing activities.

2 Research method

This research was conducted in Pasir Sialang Village, Kampar Regency using the case study method by taking the case of Nur Aini's yellow cracker business. The case study is a research method that is carried out intensively in detail about a particular object with a narrow subject over a period with sufficient depth and comprehensiveness including the environment and past conditions (Gracia, 2023). This research was conducted from September to May 2024. The tools used in this research are a questionnaire containing a list of questions and Microsoft Excel 2013 software.

The data used in this research are primary data and secondary data. Primary data was obtained by conducting surveys and observations directly at Nur Aini's yellow cracker business. The primary data consisted of raw material requirements, labor, other inputs, production results, estimated selling price data, and income. Secondary data used in this study were obtained from literature studies and relevant research results. Data analysis used in this research are production costs, income, business efficiency, added value and marketing.

Production Cost

According to Suratiyah (2020), for calculating the production cost of yellow crackers, the following formula is used.

Description:

TC : Total Cost (IDR/month)

TFC : Total fixed cost (IDR/month)

TVC : Total variable cost (IDR/month)

Fixed costs are costs used for production for a long period of time. Examples of fixed costs are machines, stoves, fryers, and others. Fixed cost is calculated as depreciation expense which is the number of years an item can be used (Febrianti *et al.*, 2018).

$$VC = P \times Q$$

Description:

VC : Variable Cost (IDR)

P : Price per unit / item (IDR / kg)

Q : Total number of units (kg)

Gross Revenue

To find out the amount of gross income earned, the following formula (Andrias et al., 2017) was applied:

$$TR = Y_i \cdot P_{yi}$$

Description:

TR: Total gross income (IDR)

Y_i : Total production (kg)

P_{yi} : Price per unit of product (IDR/kg)

Net Income

Net income was calculated using the formula (Andrias et al., 2017):

$$\pi = TR - TC$$

Description:

Π : Net income (IDR/month)

TR : Gross income (IDR/month)

TC : Total production cost (IDR/month)

Business Efficiency (RCR)

The R/C ratio can be formulated as follows (Rahmanta et al., 2023).

$$R/C = \frac{TR}{TC}$$

Description:

R/C : Revenue/Cost

TR : Total Revenue (IDR)
 TC : Total cost (IDR)

Added Value

Added value is the addition of value to a commodity by processing or special treatment so that it has added value and can increase the selling value of the product. Added value analysis is carried out using the Hayami method which considers variables of output, input and price, revenue and profit (Naton *et al.*, 2020).

Table 1. Hayami method

added-value calculation

Variables	Value
Output, Input, and Price	
1. Output (kg)	(1)
2. Input (kg)	(2)
3. Labor (HOK)	(3)
4. Conversion Factor	(4) = (1)/(2)
5. Labor Coefficient (HOK/kg)	(5) = (3)/(2)
6. Output Price (IDR/kg)	(6)
7. Labor Wage (IDR/HOK)	(7)
Revenue and Profit	
8. Raw Material Price (IDR/kg)	(8)
9. Other Input Contribution (IDR/kg)	(9)
10. Output Value (IDR/kg)	(10) = (4)x(6)
11. Production Cost (IDR/kg)	(11)
12. R/C Ratio	(12)
13.a. Added Value (IDR/kg)	(13a)
13.b. Value-added Ratio (%)	(13b) = (13a/10)x100%
14.a. Labor Income (IDR/kg)	(14a) = (5)x(7)
14.b. Labor Market Share (%)	(14b) = (14a/13a)x100%
15.a. Profit (IDR)	(15a) = 13a-14a
15.b. Profit Rate (%)	(15b) = (15a/13a)x100%

Source: Hayami (1987) in Arianti and Lestari (2019)

Marketing

1. Marketing Margin Analysis

According to Yusri *et al.* (2021), the marketing margin is obtained by subtracting the price paid by consumers from the price received by farmers. Marketing margins can be analyzed using the following formula.

$$M = H_k - H_p$$

Description:

M : Marketing Margin (IDR/kg/Production Cycle)
 Hk: Price Paid by Consumers (IDR/kg/Production Cycle)
 Hp : Price Received by Farmers (kg / Production Cycle)

2. Marketing Efficiency Analysis

According to Yusri *et al.*, (2021), to analyze marketing efficiency can use the following formula.

$$EP = \frac{TC}{TPV} \times 100$$

Description:

EP : Marketing Efficiency (%)
 TC : Total Cost (IDR/kg/Production Cycle)
 TPV : Total Product Value (IDR/kg/Production Cycle)

3 Results and discussion

Business Overview

Nur Aini yellow cracker agro-industry is a business that processes cassava into yellow cracker products. Nur Aini's yellow cracker business was established in 1994 and is self-managed by the owner, Nur Aini, and two workers from her family, namely her husband and one of her children. The reason for the establishment of Nur Aini's yellow cracker business was to increase income and meet the needs of Nur Aini's family, but the entrepreneur intends to develop the yellow cracker business because this business is one of Kampar's specialties and has become the main income for Nur Aini's family which will be continued by her son named Suryanita if Nur Aini retires from the yellow cracker business. Nur Aini's yellow cracker business is classified as a micro or home industry scale business using traditional equipment with a small workforce of less than four people. This is in line with the research of Rukayah *et al.* (2015), that the process of making cassava chips only uses household-scale labor and still uses simple technology.

Business Analysis of Nur Aini yellow cracker agro-industry fixed cost

Depreciation of each production tool for making Nur Aini yellow crackers in one month of the production process amounted to IDR 17,489. Tool depreciation is a cost that needs to be included in the calculation of fixed costs, because the cost of tool depreciation is a reduction in value caused by the use of tools during the process. The depreciation calculated is the technical life of the tool based on the use of self-owned production equipment used in the business being run (Fanindi et al, 2018). The equipment needed in the process of making yellow crackers is listed in Table 3.

Table 3. Breakdown of depreciation costs of equipment for the Nur Aini yellow cracker production process

No	Description	Price (IDR)	Residual value (IDR)	W (IDR)	N	Depreciation
	1. Large cauldron	800.000	160.000	640.000		10.667
	2. Spatula	50.000	10.000	40.000	2	1.667

3. Filter	50.000	10.000	40.000	2	1.667
4. Large basin	50.000	10.000	40.000	2	1.667
5. Small basin	20.000	4.000	16.000	2	667
6. Peeler	12.000	2.400	9.600	3	267
7. Knife	25.000	5.000	20.000	3	556
8. Fabric	5.000	1.000	4.000	1	333
Total					17.489

Revenue

Income is a receipt from the sale of products in a business that is run. Revenue in Nur Aini's yellow cracker business consists of gross income and net income. Gross income is revenue from sales obtained from the total output multiplied by the price of yellow cracker products, while net income is revenue that has been reduced by all the total costs incurred as a whole in the yellow cracker production process. Nur Aini's yellow cracker business income in December-March 2024 can be seen in Table 4.

Table 4. Revenue of Nur Aini's yellow crackers agroindustry over four periods

Revenue	Total
Gross revenue December 2023	12.960.000
Net income December 2023	6.119.944
Gross revenue January 2024	12.000.000
Net income January 2024	5.078.844
Gross revenue February 2024	12.000.000
Net income February 2024	5.078.844
Gross revenue March 2024	9.200.000
March 2024 net income	4.393.344
Total gross revenue	46.160.000
Average gross revenue	11.540.000
Total net income	20.670.976
Average net income	5.167.744

Table 4 shows the income from the Nur Aini yellow cracker agroindustry for four months which earned a total income of IDR 20,670,976 net income with an average of IDR 5,167,744 and gross income earned a total of IDR 46,160,000 with an average value of IDR 11,540,000. The highest gross revenue in December 2023 amounted to IDR 12,960,000 and the lowest revenue in March 2024 amounted to IDR 9,200,000 due to decreased demand during the month of Ramadan.

Product sales price (COGS)

The cost of products is obtained from the sum of the cost of raw materials per kilogram with the production cost per kilogram. The product sales price in December 2023 amounted to IDR 8,216 / kg. The product sales price in January and February 2024 amounted to IDR

8,789 / kg. The product sales price in December 2023 amounted to IDR 8,216 / kg. The sales price of production in the Nur Aini yellow cracker agroindustry can be seen in Table 5.

Table 5. Sales price of Nur Aini yellow cracker agroindustry products

Time	Value (IDR)
December 2023	8.216
January 2024	8.789
February 2024	8.789
March 2024	7.789
Average	8.396

Business Efficiency

The efficiency of Nur Aini yellow crackers is obtained from the ratio of gross revenue divided by total production costs. The RCR of Nur Aini's yellow crackers business during the four production periods has an average value of 1.82. This shows that Nur Aini's yellow cracker business is in the efficient category, because the $RCR > 1$, which means that Nur Aini's yellow cracker business is profitable and feasible to run. This statement is in line with Tanjung's research (2020), which argues that a business that has $RCR > 1$, then the business is feasible to be developed and managed further.

Table 6. Efficiency of Nur Aini's yellow cracker agroindustry

Time	RCR
December 2023	1,89
January 2024	1,73
February 2024	1,73
March 2024	1,91
Average	1,82

Added value

Added value is a change that occurs due to the treatment of inputs (raw materials) in a production process so that it creates value (Fadil, 2019). The added value measured is the added value generated from processing cassava into yellow cracker products. The value-added analysis in Nur Aini's yellow cracker agro- industry uses the Hayami method. The calculation of added value using the Hayami method considers variables, namely output, input and price, revenue and profit (Rizal *et al.*, 2020). Yellow crackers are the object of research by paying attention to the value of output and the price of the output produced. Yellow crackers are packaged in clear mica plastic with a size of 20 cm x 35 cm containing 12 pieces of yellow crackers or the equivalent of 1/4 kg of yellow crackers sold at a price of IDR 10,000 and 1 kg of yellow crackers at a price of IDR 40,000 / kg of yellow crackers. The calculation of the added value of Nur Aini's yellow cassava crackers agro-industry can be seen in Table 7.

Table 7. Added value of Nur Aini's yellow cracker agro-industry

No.	Added Value	Value December 2023	Value January 2024	Value February 2024	March 2024 Value	Average
I.	Output, input and price					
1	Output (kg)	27	25	25	19,2	24,05
2	Input (kg)	60	56,67	56,67	43,75	54,27
3	Labor (HOK)	3	3	3	2	2,75
4	Conversion Factor	0,45	0,44	0,44	0,44	0,44
5	Labor Coefficient	0,050	0,053	0,053	0,046	0,050
6	Output Price (IDR/kg)	40.000	40.000	40.000	40.000	40.000
7	Direct Labor Wages	50.000	50.000	50.000	50.000	50.000
II.	Revenue and Profit Raw Material Price					
8	(IDR/kg)	3.000	3.000	3.000	3.000	3.000
	Other input					
9	contribution (IDR/kg)	3.497	3.765	3.765	2.960	3.497
10	Output Value (IDR/kg)	18000	17646	17646	17554	17712
11	Production Cost	419.800	576.656	576.656	399.753	493.216
12	RCR	1,89	1,82	1,73	1,91	1,84
13	a. Added Value	11.503	10.881	10.881	11.594	11.215
	b. Value-Added Ratio	64%	62%	62%	66%	63%
14	a. Direct Labor Income	2500,00	2646,90	2646,90	2285,71	2519,88
	b. Labor Share (%)	0,22	0,24	0,24	0,20	0,23
15	a. Profit (IDR/kg)	9.003	8.234	8.234	9.309	8.695
	b. Profit Rate %	0,78	0,76	0,76	0,80	0,77

Table 7 shows that the amount of output produced from Nur Aini's yellow cracker business averaged 24.05 kg / production process, with an average input of 54.27 kg of cassava. The labor used in the production process is 3 HOK with a wage of IDR 50,000/HOK. The calculation results obtained the labor coefficient of Nur Aini yellow crackers agroindustry averaged 0.05, which means that every 0.05 labor can produce 1 kg of Nur Aini yellow crackers. The labor coefficient shows the ratio between labor and raw materials, the more raw materials used, the smaller the resulting coefficient value (Rahmi and Lucyana, 2019). The added value obtained is the reduction of output, raw material costs and other input contributions, the average added value obtained is IDR 11,215/kg. The value-added ratio of Nur Aini's yellow cracker business is 63%. This shows that Nur Aini's yellow cracker business is in the high category. The added value of agro-industry is categorized as small if the ratio of added value is <15%, if between 15%-40% it can be categorized as medium,

and if the ratio of added value produced is >40%, it is included in the high category (Yosifani *et al.*, 2021). The average profit obtained was IDR 8,695/kg with an average profit level of 77%. *al.*, 2022).

Marketing

Marketing is the activity of distributing information on a product produced to consumers, so that what consumers need is fulfilled (Luanmasar *et al.*, 2022). Marketing is a very important aspect of the agribusiness system. If the marketing mechanism runs well, then all parties involved will benefit. Therefore, the role of marketing institutions is very important. The marketing process must take place efficiently, to measure the work performance of the marketing process, marketing efficiency is used (Khaswarina *et al.*, 2019). Customer satisfaction with the product is one of the goals of marketing, so that businesses that apply marketing aspects will produce good products that are right on target to customers in need. The marketing activities of Nur Aini yellow crackers consist of two marketing channels, namely marketing directly to consumers and marketing through intermediary traders. Channel I, namely the direct channel or form of product distribution from entrepreneurs to consumers without involving diluting traders with total sales in December 2023-January 2024 of 660 kg at a price of IDR 40,000/kg, shown in Table 8 and Table 9.

Table 8. Marketing Analysis of Nur Aini's zero level channel yellow cracker business

No	Description	Price (IDR/Kg)		Percentage
		Sell/Buy	Cost	
1.	Entrepreneur			
	1. Selling Price	40.000		
	2. Marketing Costs			
	a. Packaging		496,88	15,41
	b. Transportation		2.727	84,59
	Total Marketing Cost		3223,88	100
2.	Consumer			
	1. Purchase Price	40.000		
3.	Total Margin	0		
4.	Marketing Efficiency			8,06

Table 9. *One level channel* marketing analysis of Nur Aini's yellow cracker business

No	Description	Price (IDR/Kg)		Percentage
		Sell/Buy	Sell/Buy	
1.	Producer			
	1. Selling Price	40.000		
	2. Marketing Costs			
	a. Packaging		496,88	15,41
	b. Transportation		2.727	84,59
	c. Total Marketing Cost		3223,88	

2.	Retailer		
	1. Purchase Price	40.000	
	2. Marketing Costs		
	a. Packaging	497	12
	b. Transportation	3643	88
	c. Total Marketing Cost	4140	100
	d. Selling Price	48.000	
	e. Marketing Margin	8.000	
3.	Consumer		
	Purchase Price	25.000	
4.	Marketing Efficiency		14,31

Table 8 and Table 9 show that the marketing efficiency value of Channel I is 8.06 percent with a total marketing margin of IDR 0, due to the absence of marketing institutions involved. While in marketing channel II has a marketing efficiency value of 14.31 percent with a total marketing margin of IDR 8,000. The lower the percentage of marketing efficiency, the more efficient the marketing channel (Nur, *et al.*, 2018), so the most efficient marketing channel in this study is Marketing channel I.

4 Conclusion and recommendation

Nur Aini yellow cracker agro-industry has been established since 1994 which is a household scale business because the production process is carried out at home, the labor used is less than four people. The production costs of Nur Aini's yellow cracker agroindustry incurs an average production cost of IDR 6,372,256/month. Nur Aini's yellow cracker agroindustry is feasible because the RCR results from the study amounted to 1.82, which means that the business is feasible because it has a profit. The value added generated on average has a value of IDR 11,215/kg with value added ratio of 63%.

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