

Financial Analysis and Additional Value of Mangrove Plant Processing in Kampung Nipah, Sei Nagalawan Village, Serdang Bedagai District, North Sumatra

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Abstract: Community in Kampung Nipah, Sei Nagalawan Village utilize the mangroves to be cultivated into food and beverage products such as jeruju crackers, pedada syrup and Dodol Avicenia. This research aimed to know the cultivation process of mangroves products, analyze the financial feasibility and calculate the value-added of mangrove cultivation business in Sei Nagalawan. The research is conducted by taking primary and secondary data through interviews and questionnaires and it will be analyzed descriptively. The results of this research indicates that mangrove cultivation business in Sei Nagalawan Village, Dusun III, produce various foods and beverage, which the raw materials is obtained from mangroves that grow in the village, and the cultivation processing activity is carried by the Muara Tanjung Farmers Group. Product cultivation is still done traditionally. The resulting product are kerupuk jeruju, Dodol Avicenia, and pedada syrup. The processing business of crackers jeruju, pedada syrup and Dodol Avicenia make profit and financially feasible with the R/C value of each product is 1,6; 1,2 and 1,2. The added value produced for crackers jeruju is IDR. 52.871 /kg, the added value of pedada syrup is IDR. 20.725 /kg and the added value for Dodol Avicenia is IDR. 31.318 /kg.

1 INTRODUCTION

Mangrove is a type of plant that grows on the coast and one of the unique and distinct forms of forest ecosystems found in tidal areas of sea water and tolerate the salinity of seawater. Almost along the coast in the archipelago is overgrown by mangrove plants. Mangrove has an important function in the coastal ecosystem, the existence of mangrove able to withstand abrasion in the coast. Mangrove is also a good place to breed for several species of fish. In addition mangrove also has a high economic value to be utilized. Mangrove forests have the potential of natural resources are very much to be used one of them into food and beverage products. Mangrove has an important role both ecologically and economically. Ecologically, mangrove acts as a coastal protector of wind, waves and storms.

Mangrove stands serve as a biological bastion of settlements, buildings and farms of strong winds or sea water intrusions. Economically, mangroves can be utilized directly for daily necessities such as

firewood, building materials, household necessities, paper, medicines, bark and charcoal and even the fruit can be processed into various foods and beverages (Khoriah, 2015).

Sei Nagalawan Village is one of the villages located in Perbaungan subdistrict, Serdang Bedagai District. Sei Nagalawan village has a mangrove ecosystem that is a mainstay in terms of mangrove ecotourism and some mangrove plants in the village of Sei Nagalawan also utilized the surrounding community into processed food products and beverages. Some processed products such as chips and tea made from jeruju leaf (*Acanthus ilicifolius*), dodol derived from the api-api (*Avicennia marina*) and syrup from the fruit pedada (*Sonneratia caseolaris*). Processing of mangrove plants into processed food products and beverages conducted by people who are members of the Farmers Group located in the village of Sei Nagalawan. This study aims to identify the processing of mangrove plant products, analyze the financial feasibility and calculate the added value of mangrove plant processing business in Sei Nagalawan Village.

2 METHODOLOGY

2.1 Place and Time

This research was conducted at mangrove processing plant by Muara Tanjung Farmer Group located in Sei Nagalawan Village, Perbaungan Subdistrict, Serdang Bedagai Regency, North Sumatera Province. The study was conducted from March to April 2018.

2.2 Tools and Materials

The tool used in this study is a camera that is useful for research documentation, stationery to record information about research. Materials used are questionnaires to obtain secondary or primary data.

2.3 Types and Data Sources

Types and sources of data used in this study are as follows primary data, ie data obtained directly from the respondents of the study by using a questionnaire containing the questions asked in writing to respondents to get answers, responses and information required by researchers. Secondary data, ie data obtained through recording on agencies and other library sources related to this research.

2.2 Data Collection

Data collection technique used in this research is survey, that is doing direct observation at research location. Interview, which is conducting question and answer with respondent, related to problem in this research by using questionnaire sheet. Library study, ie data collection using literature related to this research.

2.4 Data Analysis

Data analysis, among others: (1) Processing this data is obtained by interview and questionnaire with the respondent. Respondent from this research is chairman and member of Muara Tanjung Farmer Group of 27 people. Then analyzed descriptively and by doing direct observation. It aims to know the general description of managed business and processed products in the research area, (2) Business Feasibility Analysis Data obtained through interviews and questionnaires to the processors are then analyzed quantitatively through feasibility calculations:

a. Analysis of business income This analysis aims to determine the amount of profits derived from the effort made this. According Asanti (2011) is formulated as follows: $I = TR - TC$

Information:

I: Advantages

TR: Total Revenue

TC: Total Cost

Where to find Total Revenue and Total Cost:

$TR = P \times Q$

$TC = TFC + TVC$

Information:

P: Price per unit of Product

Q: Total production

TFC: Total fixed cost

TVC: Total non-fixed costs

Criteria used:

- If total revenue > total cost, then the business is said to be profitable.

- If total revenue = total cost, then business is not profitable and no loss.

- If total revenue < total cost, business loss. b.

Analysis of Revenue Cost Ratio (R / C)

This analysis aims to test the extent to which the results obtained from a particular business is quite profitable. The extent to which each rupiah value of the cost used in a particular business activity can provide the value of revenue as a benefit. According to Supartama (2013) the formula for calculating the R / C value is as follows:

$R / C = \frac{\text{Total Receipts}}{\text{Total Cost}}$

Total Cost $R / C > 1$, then business profit $R / C = 1$, then break even $R / C < 1$, then the business loss

2.5 Payback Period

Payback Period is the time required for funds embedded in an investment to be recovered entirely. According to Sianturi (2012) formula Payback Period (PP) is formulated as follows: $PP = \frac{\text{Total Cost}}{\text{1 times production}}$

Total income.

Break Even Point Analysis (BEP) Break Even Point analysis is needed to find out the volume of sales or production of a company and is a point where the company does not get a profit and does not suffer losses. BEP calculations by Wijayanti (2012) can be done with the following formula: $BEP \text{ Production Vol} = \frac{TFC}{\text{unit} - VC \text{ unit}}$ Or the calculation of BEP on the basis of rupiah unit is done by the following formula:

$BEP = \frac{\text{Total Cost}}{\text{Total Production}}$

3. Add Value Analysis a. Value-added

Value-added analysis of a product is needed to determine whether the product provides added value to the surrounding community even if it does not provide a profit in its production. The determination of the added value of a product can be calculated in the following way: if the total output of each production is A, and the amount of raw material required for one production in kg is B. Then the conversion factor is:

$D = AB$ Calculation The output value is as follows: $J = D \times F$

Where:

A: The output value

D: Conversion factor

F: Price of output

The formula for calculating value added is formulated as follows:

$K = J - I - H$ Information:

K: Value added

A: The output value

I: Other input donations

H: Raw material price

b. Added Value Distribution

Distribution of the value of tam

Financial feasibility analysis is used in farming to understand the feasibility and how much profit a farmer gets. The amount of profit generated from a business can be known from the difference between the many receipts obtained by the amount of production costs required. Therefore a business needs a good plan in order to be able to generate profits as big as possible. Here is a financial feasibility analysis of mangrove processing business in Sei Nagalawan Village, Serdang Bedagai District.

3 RESULTS AND DISCUSSION

3.1 Cost Production and Income

In this mangrove processing business there are some costs incurred to perform production activities called production costs. Production cost is divided into two, namely fixed cost and variable cost. Fixed costs are costs independent of the amount of production of jeruju crackers, dodol sparks and pedal syrups such as equipment depreciation, land rent, taxes and equipment maintenance. While the variable cost is the cost of which depends on the amount of production of jeruju crackers, pedal syrup and dodol flames such as the cost for starch, starch, coriander, fine shrimp, salt, brown sugar, white sugar, garlic, oil, and for gas as well as the required labor wages.

Total cost of production is derived from the sum of fixed costs and variable costs required in a single production. The calculation of each item and the cost incurred for a one-time production of jeruju crackers can be seen in Appendix 1. The components of fixed costs consist of depreciation expenses, equipment and building maintenance costs, land rent and taxes. The variable cost component consists of the cost of raw materials of jeruju leaves, coriander, garlic, sugar, salt, fine shrimp, oil, starch, gas, labor and packaging wages. The calculation of the profits derived from a business is derived from the difference in total receipts with total cost of production per one time of production. Total revenue can be known from the multiplication of the number of products produced in one production at the price of the product per pack. Cost detail of processing of jeruju crackers is found in Table 1.

Table 1: Cost and Income of Jeruju Cracker Processing by Muara Tanjung Farmer Group

Description	Value	Percentage(%)
Fixed cost (IDR)	54.134	10,7
Variabel Cost (IDR)	450.400	89,3
Total cost (IDR)	504.534	100
Volume (pack)	100	
Price (IDR/ pack)	8.000	
Receive (IDR)	800.000	
Income (IDR)	295.466	

Based on the details of the cost in table 1 it can be seen the amount of variable costs used is quite large this is because the amount of costs incurred for other raw materials is quite large. Net income obtained from processing jeruju crackers is IDR. 295,466 in one production. The number of products produced in one production is 100 packs with total acceptance of IDR. 800,000. Can be seen total revenue obtained greater than the total cost incurred for production, on the basis of the business processing jeruju crackers can be said to be feasible and meet the criteria in generating profits.

Table 2: Cost and Revenue Processing of syrup Pedada by Muara Tanjung Farmer Group

Description	Value	Percentage (%)
Fixed cost (IDR)	32.900	6,5
Variabel Cost (IDR)	472.000	93,5
Total cost (IDR)	504900	100
Volume (pack)	50	
Price (IDR/ pack)	12.000	
Receive (IDR)	600.000	
Income (IDR)	95.100	

Based on Table 3, it can be seen the proportion of variable cost is also greater that is equal to IDR. 472,000, due to the cost required for larger supporting materials as well as other factors such as labor required. The total revenue obtained from pedal syrup processing is IDR. 600,000 out of 50 packs of products produced per one production, so the net income received is IDR. 95.100. It indicates that the processing of syrup worthy and meet the criteria of profit.

Table 3: Cost and Revenue of Dodol Avicenia Processing by Muara Tanjung Farmer Group

Description	Value	Percentage(%)
Fixed cost (IDR)	47.634	18,04086
Variabel Cost (IDR)	216.400	81,95914
Total cost (IDR)	264.034	100
Volume (pack)	33	
Price (IDR/ pack)	10.000	
Receive (IDR)	330.000	
Income (IDR)	65.966	

The processing of dodol Avicenia requires variable costs such as glutinous rice flour, brown sugar, white sugar, coconut milk, gas, and plastic packaging. Therefore the variable cost required is quite large. Production volume produced per one time production is 33 packs with selling price IDR. 10.000, total revenue earned as much as IDR. 330.000. Net income earned is IDR. 65.966. It shows the business of processing dodol fire-flame feasible and meet the criteria of profit.

3.2 R/C Ratio Analysis

R / C Ratio Analysis is an analysis obtained from the ratio of total revenue and total cost required for production. This analysis aims to determine how much profit a business gets from the amount of costs incurred for its production. The value of R / C processing of jeruju crackers can be seen in Table 4.

Table 4: The value of R / C processing of jeruju crackers

Description	Total
Receive (IDR)	330.000
Total of Cost Production (IDR)	504.534
R/C	1.6

The result of comparison between total revenue and total production cost of R / C results obtained by 1.6, the ratio obtained is greater than 1, it shows the processing business of jeruju crackers produce profit

and has the potential to be developed. The ratio of 1.6 indicates that if the cost production issued is IDR. 504,534.

Table 5: Total revenue and total production cost of R / C syrup pedada

Description	Total
Income (IDR)	600.000
Total of cost production (IDR)	504.900
R/C	1,2

Based on Table 4, it can be seen that the comparison between total revenue and total production cost of R / C results obtained is 1.2, the ratio obtained is greater than 1, it indicates that the processing of syrup of pedada produce profit and has the potential to be developed. Ratio 1.2 indicates that if the production cost incurred is IDR. 504,900 it will be gained 1.2 times of production costs incurred.

Table 5: R / C Analysis of Dodol Avicenia Processing by farmer group of Muara Tanjung

Description	Total
Recieve (IDR)	330.000
Total of cost production (IDR)	264.034
R/C	1.2

Based on Table 5, we can see the result of comparison between total revenue and total production cost of R / C results obtained by 1.2, the ratio obtained is greater than 1, it shows the business of dodol Avicenia processing produce profit and has the potential to be developed . Ratio 1.2 indicates that if the production cost incurred is IDR. 264.034 it will be gained 1.2 times of production costs incurred.

3.3 Payback Period Analysis

Payback Period analysis aims to find out the time required for funds invested by investors back entirely. The repayment period is obtained by comparing the total cost of production with the profit received multiplied by 1 time of production.

Table 6: Payback Period Analysis of Mangrove Processed Products by Muara Tanjung Farmer Group

Kinds of product	Payback Period (times)
Jeruju Crakers	2
Syrup Pedada	5
Dodol Avicenia	4

Based on Table 6. it can be seen that the time required for the return of processing capital of jeruju crackers is 2 times the production. In the processing of pedal syrup the time required for the return of capital for 5 times the production and for the processing of fire-spark dodol the time required for payback for 4 times production. The time period of return of capital of pedada syrup and dodol of fire long enough because the cost required to produce the product is big enough and production volume produced in one production little compared to jeruju crackers, the limitation of raw material also influences because the raw material of Avicenia and pedada seasonal production is also done seasonally.

This is in accordance with the statement Moerdiyanto (2008) the most important variable that affects the financial needs of the company is the projection of sales volume. Sales forecasting usually tends to be raised in the projection of financial needs. Therefore, careful sales forecasting is the basis for the projection of financial needs. For this IDR it is necessary to establish the ratio between the level of sales and the types of expenditures required. It should also be taken into account seasonal sales and sales fluctuations.

3.4 Break Even Point Analysis (BEP)

Break Even Point analysis or break even analysis needs to be done for feasibility analysis of farming. This analysis aims to determine a point where the business is not experiencing a loss or gain.

Based on Table 7, it can be seen that the breaking point of jeruju cracker processing occurs when the production reaches 15 packs. The number indicates the breakeven number is below the production volume of 100 packs. While in terms of selling price breakeven point on selling jeruju jeruk occurs at the selling price of IDR. 5,045 per pack. Based on the results of the analysis can be said that the business processing jerukan crackers generate profits.

Table 7: Breakeven Point Break Analysis (BEP) Jeruju Cracker Product by Muara Tanjung Farmer Group

Description	Value
Fixed cost (IDR)	54.134
Variabel cost (IDR)	450.400
Total cost (IDR)	504.534
Volume (pack)	100
Price (IDR/pack)	8.000
Recieve (IDR)	800.000
Income (IDR)	295.466
BEP Volume of Production (pack)	15
BEP price (IDR/ pack)	5.045

Table 8: Breakeven Point Analysis (BEP) syrup Pedada Product by Muara Tanjung Farmer Group

Description	Value
Fixed cost (IDR)	32.900
Variabel cost (IDR)	472.000
Total cost (IDR)	504.900
Volume (Botle)	50
Price (IDR/ botle)	12.000
Receive (IDR)	600.000
Income (IDR)	95.100
BEP Volume Production (Botle)	13
BEP Price (IDR/ botle)	10.098

In Table 8, it can be seen that the break-even point of pedal syrup processing occurs when the production reaches 13 bottles. The number indicates the breakeven number is below the production volume of 50 bottles. While in terms of selling price breakeven point on selling jeruju jeruk occurs at the selling price of IDR. 10,098 per bottle the price is still below the actual selling price of IDR. 12,000 per bottle. Based on the results of the analysis can be said that the processing of syrup pedada produce profits.

Table 9: Break-Even Point Analysis (BEP) Dodol Avicenia Product by Muara Tanjung Farmers Group

Description	Value
Fixed cost (IDR)	47.634
Variabel cost (IDR)	216.400
Total cost (IDR)	264.034
Volume (pack)	33
Price (IDR/pack)	10.000
Recieve (IDR)	330.000
Income (IDR)	659.66
BEP Volume of Production (pack)	14
BEP price (IDR/ pack)	8.001

Based on Table 9. it can be seen that the break-even point of pedal syrup processing occurs when the production reaches 14 bottles. The number shows the number of breakeven point is below the production volume of 33 bottles. While in terms of selling price breakeven point on selling jeruju jeruk occurs at the selling price of IDR. 8.001 per bottle the price is still below the actual selling price of IDR. 10,000 per bottle. Based on the results of the analysis can be said that the processing of syrup pedada produce profits.

3.6 Value Added Analysis

Value added analysis needs to be done in a farming business because this analysis aims to determine the success of a business in providing value or more rewards to business actors such as statement Nur (2013) usability to analyze added value to know the value added occurs due to certain treatment given to agricultural commodities, distribution of benefits received by the owner and labor. The calculation of cost and income of processed mangrove products contained in appendix 5. Based on these data can be seen on the processing of jeruju crackers if the output price of IDR. 8000 and the conversion factor is 10 then the output value is IDR. 80,000.

The value will then be deducted by the amount of costs incurred for other supporting materials such as starch, coriander, salt, sugar, garlic, fine shrimp, and plastic packaging will be added value for Jeruju cracker products of IDR. 52,871 for one production requiring 1 kg of jeruju leaf so that the added value for jeruju cracker product is IDR. 52.871 / kg. As for pedal syrup products if the selling price of IDR. 12.000 and the conversion factor 10 then the output value obtained is IDR. 120,000. The value is then subtracted by the amount of expenses incurred for other supporting materials such as white sugar, gas, bottle, and label. After that the added value for syrup pedada is IDR. 103,627 for one production that requires 3 kg of fruit pedada so that the added value of syrup pedada product is IDR. 20.725 / kg.

On the calculation of added value Dodol Avicenia if the sale price of IDR. 10,000 and the conversion factor 11 then the output value obtained is IDR. 110,000. Value are then subtracted by the amount of costs incurred for other supporting materials such as white sugar, brown sugar, coconut milk, gas, plastic packaging, and labels. After that, the added value for dodol Avicenia is IDR. 93955 for one production that requires 5 kg of Avicenia so that the added value of dodol avicenia products is IDR. 31,318/kg. Based on the results of value-added analysis can be seen each product generates substantial added value to business actors. It also shows that this mangrove processed product has great potential to be developed. But the bottleneck is the production of seasonal syrup and dodol Avicenia that is seasonal so that the production is limited.

3.7 Added Value Distribution

Based on the calculation results can be obtained value added for jeruju crackers is IDR. 52.871 / kg, syrup pedada is IDR. 20.275 / kg, and for dodol

avicenia is IDR. 31.318 / kg. The calculation of value-added distribution is influenced by the selling price of the product, the purchase price of each raw material, and the production and marketing cost of each factor.

Table 10: Distribution Analysis of Added Value of Mangrove Processed Products by Muara Tanjung Farmer Group

Name product	Margin (IDR/Kg)	Labour (%)	Profit level (%)
Jeruju Crakers	80.000	13,6	86
Syrup Pedada	120.000	23,1	76
Dodol Avicenia	110.000	25,5	74

Based on Table 10, the result of remuneration given to the owner of production factor is IDR. 80.000 / kg for jeruju crackers, IDR. 120.000 / kg for syrup pedada and IDR. 110.000 / kg for dodol avicenia. Based on the calculation of the margin then obtained the share of labor as much as IDR. 7,200 or 13.6% of the production value for jeruju cracker products, as much as IDR. 24,000 or 23.1% of production value for pedal syrup products and as much as IDR. 24,000 or 25.5% of the production value for the product of Dodol Avicenia. Furthermore, for the rate of profit obtained by the processor is equal to 86% of the value of Jeruju cracker production, 76% of the production value of pedal syrup and 74% of the production value of Dodol Avicenia. This means that if will be produced 100 units of production value will be obtained profits of 86, 76 and 74 units of products produced.

According to research results from Prayogo (2015) about the financial analysis of the utilization and processing of jeruju leaf (*Acanthus ilicifolius*) into various processed products conducted in the same research location obtained the results for the distribution of added value in processing jeruju crackers IDR. 12,500 or as much as 25% while for tea jeruju IDR. 15,000 or 18 %% of production value. For the profit rate for the processor is 74% of the value of the production of jeruju crackers and 81% of the production value of jeruju tea, which means that every 100 units of production value to be produced will be gained by 74 and 81 units. Based on these results can be seen the comparison on the level of profit for jeruju directly in the location of tourism Kampung Nipah so it becomes characteristic for tourists who visit crackers that increased from 74% to 86% this indicates that the mangrove processing business is experiencing one of the factors that support these developments is because the processed products are marketed the tourist sites.

4 CONCLUSION

The conclusions of this study are: The product processing is still done manually by the members of Muara Tanjung Farmer Group. The resulting product is the product of jeruju crackers, dodol Avicenia, and syrup pedada. Jerawang cracker processing business, pedal syrup and flame dodol produce profit and financially feasible with R/C value of each product is 1.6, 1.2 and 1.2. The added value generated for jeruju cracker products is IDR. 52.871 / kg, the added value of syrup pedada products is IDR. 20.725 / kg and the added value for the dodol avicenia product is IDR. 31,318/ kg.

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