

# Value Added Analysis in the Processing Business of Palm Plant Products (*Arenga pinnata Merr*) in Minta Village, Penyinggahan District, West Kutai Regency

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## ABSTRACT

Sugar palm is one of the plantation crop commodities that has a high potential economic value. Almost all parts of the palm plant can be used, starting from the roots, leaves, stems, fruit, and palm fiber. The purpose of this study was to analyze the income and added values of the palm processing business in Minta Village, Penyinggahan District, West Kutai Regency. This research was conducted on the business of processing sugar palm products in Minta Village, Penyinggahan District, West Kutai Regency from February to April 2021. The sampling method used was saturated / census sampling. The number of respondents was 31 respondents who cultivated sugar palm plants. From 31 respondents there were 5 respondents who also cultivated Fresh Nira, and 1 respondent who also cultivated Artificial Sugar. The data collection method was performed by means of observation and direct interviews with respondents. The data analysis method used was the analysis of costs, revenues, income and added value. The results showed that the income from the business of processing sap into palm sugar with an average of 365,119.84 IDR months<sup>-1</sup> respondent<sup>-1</sup>, the income from processing sap into fresh sap was on an average of 32,473.33 IDR months<sup>-1</sup> respondent<sup>-1</sup>, and the income from the business of processing sap into ant sugar was on an average of 107,388.9 IDR months<sup>-1</sup> respondent<sup>-1</sup>. Processing sap into palm sugar provided added value was on an average of 2,859.18 IDR kg<sup>-1</sup> month<sup>-1</sup>, processing sap into fresh sap provided added value was on an average of 7,500 IDR liter<sup>-1</sup> month<sup>-1</sup>, and processing sap into ant sugar provided added value with an average of 6,750 IDR kg<sup>-1</sup> month<sup>-1</sup>. Based on the results of the research, the business of processing palm products was able to get an added value of 7,500 IDR liters<sup>-1</sup> month<sup>-1</sup> in the fresh sap business, the ant sugar business an added value of 6,750 IDR kg<sup>-1</sup> month<sup>-1</sup>, an added value of 2,859.18 IDR kg<sup>-1</sup> month<sup>-1</sup> in the palm sugar business.

**Keywords:** *Palm products, Income, Value added.*

## 1. INTRODUCTION

Non-timber forest products (NTFPs) are parts of forest ecosystems that play an important role in nature and humans. NTFFPs do not require complex technology to obtain, because NTFFPs can be obtained free of charge from nature, have very high economic value and are used by communities around the forest either directly or indirectly. Several types of NTFFPs can be easily obtained. It is clear that the existence of NTFFPs is believed to be most closely related to the needs of communities around the forest in meeting their food,

shelter, and other needs. NTFFPs which are usually utilized and commercialized are as follows:

sandalwood, agarwood, sago, rattan, sugar palm, breadfruit, bamboo, natural silk, jernang, frankincense, eucalyptus, various medicinal plants, essential oils, and honey. One of the NTFFPs that has a fairly high economic value because almost all parts of the plant can be utilized and is a source of livelihood for rural communities is *Arenga pinnata* or so-called sugar palm [10].

Sugar palm is one of the plantation crop commodities that can grow well in the tropics and has a high potential for economic value. Almost all parts of the palm plant

can be used, starting from the roots that can be used as medicine, the leaves that are processed into roofs or the sticks can be used as broom sticks, the stems can be processed into palm flour, and the fruit can be processed into fro, and the fibers can be made into handicrafts. The superior products of palm plants as a source of food and energy include palm sugar, ant sugar, fresh sap, palm fruit, and vinegar, and alcoholic beverages. In addition, superior products of palm plants are also widely used for handicrafts or as building materials. Palm sugar is known by the people of Indonesia as one of the sweeteners for food and beverages.

Palm sugar is obtained by tapping the male flower bunches that begin to bloom and scattering the yellow pollen. These bunches are first crushed by beating them for some time, until liquid comes out of them. The bunches are then cut and the ends are hung with bamboo rods to collect the liquid that comes out. The liquid that is released from the sweet bunch, called sap, is clear, slightly cloudy in color. The sap cannot last long, therefore the filled bamboo container must be immediately taken to be processed for the sap [7].

Value added is the additional value of a commodity because it undergoes a processing process, transportation process, or storage process in production. The calculation of added value aims to measure the value added that can be obtained by palm sugar craftsmen from the processing of one liter of sap into brown sugar [11].

The higher added value of sugar palm products can certainly increase economic growth, especially for rural communities. Great economic growth can of course have an impact on increasing business/work and community income which aims to improve people's welfare [6].

Agro-industry located in rural areas with small and medium scale businesses as well as home industries, has a strategic potential, position, and role in order to create an economic structure that is able to provide

economic services, implement equity, and can encourage better economic growth and realize economic stability. We can see this based on a prolonged crisis, small businesses are still able to survive. Continuous guidance and development to the community are very much needed in order to increase progress in the small industry so that it can grow independently into a formidable business, can create bigger market opportunities and have advantages in providing satisfaction to consumers [4].

The spread of sugar palm in East Kalimantan Province covers almost all areas such as Samarinda, Balikpapan, Bontang, Paser, Kutai Kartenegara, West Kutai, and East Kutai. As of 2015 the total area of sugar palm plantations in East Kalimantan was 1,220 hectares with a production of 465 tons of sap and was able to absorb a workforce of 1,764 people (East Kalimantan Provincial Plantation Office, 2015) [3].

Palm trees also grow in Minta Village, which is located in Peninggahan District, West Kutai Regency. Minta Village had a population of 871 people and an area of 3,691 hectares in 2019 (Monographic Data of Minta Village, 2019) [2]. In addition to natural and cultural tourism, Minta Village has the potential for Handicraft Industry, for example the small craft industry for processing palm sugar, fresh sap, and ant sugar. Some people depend on small industrial businesses to process palm sugar which have been carried out for generations.

The palm plantation processing business carried out by the community in Minta Village still uses simple equipment, besides the use of palm sugar, fresh sap, ant sugar as raw materials for the daily food industry which are widely used by various levels of society, both in villages and in cities. This certainly provides an opportunity to develop the palm processing industry business more broadly. The processing of palm sugar, fresh sap and ant sugar is carried out by the community in Minta Village with the raw material being sap derived from uncultivated (wild) palm plants. With the sugar palm processing business activities that change the shape of the primary product into a new product with higher economic value after going through the production process, it will be able to provide added value because of the issuance

of costs so as to form a new higher price and greater profits if compared without going through the production process. To find out the added value given by the product produced from palm trees as raw material, it is necessary to analyze the added value so that it can be seen whether the business being carried out is efficient and profitable.

Based on the description above, a research was conducted on " Value Added Analysis in Palm Oil Product Processing Business in Minta Village, Penyinggahan District, West Kutai Regency" and the purpose of this study were to analyze the income and added values of the palm processing business in Minta Village, Penyinggahan District, West Kutai Regency.

## **2. METHODS**

### ***2.1. Time and place***

This research was conducted from February to March 2021 in Minta Village, Penyinggahan District, West Kutai Regency. Minta Village is a village that produces quite a lot of sugar palm products compare with other areas in Penyinggahan District, West Kutai Regency.

### ***2.2. Method of collecting data***

The data needed in this study include, among others, primary data and secondary data. Primary data were obtained from direct observation, direct interviews with palm plant craftsmen. While secondary data were

obtained from literature studies and information from agencies related to the implementation of the research. Secondary data is data obtained specifically from monograph data, BPS and related agencies related to research.

### 2.3. Sampling Method

The sampling method used in this research was saturated sampling or census. Where the population in this study is very limited so it is not possible to use only a few samples, therefore the researchers took the number of samples equal to the total population or called a census, namely the number of palm plant craftsmen in Minta Village, Penyinggahan District, West Kutai Regency, totaling 31 people.

### 2.4. Data analysis method

To describe the business of processing sugar palm products in Minta Village, Penyinggahan District, West Kutai Regency, and to find out the income of plant processors, we calculated cost, revenue, income, and perfume value added analysis.

### 2.5. Total Cost

According to Sukirno (2011), the total amount of production costs incurred is called the total cost [8]. The total cost can be calculated using the following formula:

$$TC = TFC + TVC \quad (1)$$

Information:

TC = Total Cost  
TFC = Total Fixed Cost  
TVC = Total Variable Cost

#### 2.5.1. Revenue

According to Nabilah et al. (2015), revenue can be calculated using the following formula [5]:

$$TR = P \times Q \quad (2)$$

Information:

TR = Total Revenue  
P = Price  
Q = Quantity (Amount of Production)

#### 2.5.2. Income

According to Purnama (2017), the income of farmers can be calculated using the following formula [9]:

$$I = TR - TC \quad (3)$$

Information:

I = Income  
TR = Total Revenue  
TC = Total Cost

### 2.6. Value added

The value added analysis in this study used the value added analysis method according to Sudiyono in calculating the value added in the processing stage with the following formula [1]:

Calculating Added Value

#### 2.6.1. Gross added value (NTB)

$$NTb = Na - Ba \quad (4)$$

$$= Na - (Bb + Bp) \quad (5)$$

Information :

NTb = Gross added value  
Na = Value of the final product of palm products  
Ba = Intermediate cost  
Bb = Cost of raw material for palm products  
Bp = Cost of auxiliary materials

#### 2.6.2. Net Value Added (NTN)

$$NTn = NTb - NP \quad (6)$$

$$NP = (\text{Initial Value} - \text{Remaining Value}) / \text{(Economic age)} \quad (7)$$

Information :

NTn = Net value added  
NTb = Gross value added  
NP = Depreciation value

#### 2.6.3. Value Added per Raw Material

$$NTbb = NTb : \Sigma bb \quad (8)$$

Information :

NTbb = Standard value added used  
NTb = Gross value added  
bb = Amount of raw materials used

#### 2.6.4. Value Added per Labor

$$NTtk = NTb : \Sigma TK \quad (9)$$

Information:

NTtk = Value added per worker  
NTb = Gross added value  
TK = Number of hours worked

## 3. RESULTS AND DISCUSSION

### 3.1. Production cost

Production costs in this study were the costs incurred by the processing of sugar palm plants in Minta Village in carrying out their business during the production process. Production costs include fixed costs (depreciation of tools) and non-fixed costs (cost of raw materials, cost of auxiliary materials, labor costs and other costs).

### 3.1.1. Fixed Cost (Cost of depreciation)

The total depreciation cost of tools for processing fresh sap was 4833.34 IDR month<sup>-1</sup> was on an average of 966.67 IDR month<sup>-1</sup> respondent<sup>-1</sup>. The total cost of equipment depreciation for processing palm sugar was 475.68 IDR month<sup>-1</sup> was on an average of 15,344.68 IDR month<sup>-1</sup> respondent<sup>-1</sup>. The total cost of depreciation of tools for the processing of granulated sugar was 9,611.10 IDR month<sup>-1</sup> was on an average of 9,611.10 IDR month<sup>-1</sup> respondent<sup>-1</sup>.

**Table 1.** Details of the total cost of production of palm plant products processing business in Minta Village

Total Production Cost	Average (IDR month <sup>-1</sup> respondent <sup>-1</sup> )		
	Fresh Sap	Palm Sugar	Ant Sugar
Fixed Cost :			
Tool Depreciation Costs	966.67	15,344.68	9,611.10
Fixed Fee :			
Raw Material	24,000	1,932,258	100,000
Cost helper	0	794,000	30,000
Labor Costs	19,360	1,702,116.13	125,000
Other Charges	19,200	152,903	28,000
Sum	63,526.67	4,571,009.19	292,611.1

### 3.1.2. Variable Costs (total variable costs)

#### 3.1.2.1 Raw Material Cost

The total cost of sap water in the fresh sap processing business was 480,000 IDR month<sup>-1</sup> was on an average of 96,000 IDR month<sup>-1</sup> respondent<sup>-1</sup>. The total cost of sap water in the palm sugar processing business was 59,900,000 IDR month<sup>-1</sup> was on an average of 1,932,258 IDR month<sup>-1</sup> respondent<sup>-1</sup>. And for the total cost of sap water in the ant sugar processing business was 100,000 IDR month<sup>-1</sup> was on an average of 100,000 IDR month<sup>-1</sup> respondent<sup>-1</sup>.

#### 3.1.2.2. Auxiliary Material Cost

In the process of processing palm sugar, from 31 respondents, there was 1 respondent who did not use granulated sugar. 30 respondents used granulated sugar of 1,588 kg month<sup>-1</sup> was on an average use of 52.90 kg month<sup>-1</sup> respondent<sup>-1</sup>. The unit price of granulated sugar was 15,000.00 IDR kg<sup>-1</sup>. The cost of purchasing granulated sugar issued by 30 respondents in the palm sugar processing business was 23,820,000.00 IDR month<sup>-1</sup> was on an average of 794,000 IDR month<sup>-1</sup> respondent<sup>-1</sup>. In processing the fresh sap, respondents did not use granulated sugar. in processing granulated sugar,

the costs incurred in purchasing granulated sugar were 30,000.00 IDR month<sup>-1</sup> was on an average of 30,000.00 IDR month<sup>-1</sup> respondent<sup>-1</sup>.

#### 3.1.2.3. Labor costs

The use of labor referred to in this study was all types of labor for each business activity in the production process of palm plants such as harvesting, transportation, processing, and packaging which were calculated per hour per person. Labor costs that were taken into account in this study were labor costs in each processing stage of palm sugar, fresh sap, and palm sugar. The wage of labor in processing fresh sap was 96,800 IDR month<sup>-1</sup> was on an average of 19,360 IDR month<sup>-1</sup> respondent<sup>-1</sup>. The wage of labor in palm sugar processing was 52,765,600 IDR month<sup>-1</sup> was on an average of 1,702,116.13 IDR month<sup>-1</sup> respondent<sup>-1</sup>. The wage of workers in the processing of palm sugar were 120,000 IDR month<sup>-1</sup> was on an average of 120,000 IDR month<sup>-1</sup> for 1 respondent.

#### 3.1.2.4. Other Fees

Other costs of variable cost in processing palm products included packaging and diesel fuel costs. The total cost of plastic bottles in the processing of fresh sap was 384,000.00 IDR month<sup>-1</sup> was on an average of 76,800.00 IDR month<sup>-1</sup> respondent<sup>-1</sup>. For the total cost in the palm sugar processing process was 4,492,000.00 IDR month<sup>-1</sup> was on an average of 144,903.00 IDR month<sup>-1</sup> respondent<sup>-1</sup>. For the total cost of plastic packaging issued by 1 respondent for the processing of palm sugar was 20,000.00 IDR month<sup>-1</sup> was on an average of 20,000.00 IDR month<sup>-1</sup> respondent<sup>-1</sup>. The amount of diesel fuel spent in palm sugar processing business in Minta Village was 31 liters with a unit price of 8,000.00 IDR liter<sup>-1</sup>. The total cost of purchasing diesel fuel was 248,000.00 IDR month<sup>-1</sup> was on an average of 8,000.00 IDR month<sup>-1</sup> respondent<sup>-1</sup>. The total cost of purchasing diesel was 8,000.00 IDR month<sup>-1</sup> was on an average of 8,000.00 IDR month<sup>-1</sup> respondent<sup>-1</sup>.

### 3.1.3. Total Cost ( Total Cost)

Total cost refers to the overall cost of production that involves both fixed costs and variable costs issued by entrepreneurs processing palm plant products in the production process.

**Table 2.** Short cut keys for the template

Information	Average (IDR) Respondents <sup>-1</sup>		
	Fresh Sap	Palm Sugar	Ant Sugar
Total Revenue	96,000	4,936,129.03	400,000
Total Cost	63,526.67	4,571,009.19	292,611.10
Income	32,473.33	365,119.84	107,388.90

Source: Primary Data (processed), 2021.

### **3.2. Total Revenue of Palm Plant Processing Business in Minta Village**

Revenue is the result of the amount of production with the selling price at the level of craftsmen. In the business of processing palm sugar, the selling price at the level of craftsmen was 10,000 IDR liters<sup>-1</sup>. Total revenue of palm sugar was 480,000 IDR month<sup>-1</sup> obtained by 5 respondents was on an average of 96,000 IDR month<sup>-1</sup> respondents<sup>-1</sup>. The selling price at the level of craftsmen for fresh sap was 7,000 IDR kg<sup>-1</sup>. Total revenue of fresh sap 153,020,000 IDR month<sup>-1</sup> obtained by 31 respondents was on an average of 4,936,129.03 IDR month<sup>-1</sup> respondents<sup>-1</sup>. On the business of processing ant sugar, the selling price at the artisan level was 40,000 IDR kg<sup>-1</sup>. Total revenue of 400,000 IDR month<sup>-1</sup> obtained by 1 respondent was on an average of Rp 400,000 month<sup>-1</sup> respondent<sup>-1</sup>.

### **3.3. Income of Palm Plant Processing Business in Minta Village**

Craftsmen's income is derived from the difference between total revenue minus the total cost of production. The total receipt received by 5 respondents during one month of production in fresh sap processing was 480,000 IDR was on an average of 96,000 IDR month<sup>-1</sup> respondent<sup>-1</sup>, and total production cost was 317,633.34 IDR month<sup>-1</sup> was on an average of Rp 63,526.67 month<sup>-1</sup> respondent<sup>-1</sup>. From the difference, the total income was obtained which was 162,366.66 IDR month<sup>-1</sup> was on an average of 32,473.33 IDR month<sup>-1</sup> respondent<sup>-1</sup>.

The total revenue received by 31 respondents during one month of production in palm sugar processing was 153,020,000 IDR month<sup>-1</sup> was on an average of 4,936,129.03 IDR month<sup>-1</sup> respondent<sup>-1</sup>. Total production cost 141,701,285 IDR month<sup>-1</sup> was on an average of 4,571,009.19 IDR month<sup>-1</sup> respondent<sup>-1</sup>. From the difference, the total income was obtained which is 11,318,715 IDR month<sup>-1</sup> was on an average of 365,119.84 IDR month<sup>-1</sup> respondent<sup>-1</sup>.

The total revenue received by 1 respondent during one month of production in ant sugar processing with an

average of Rp 400,000 month<sup>-1</sup> respondent<sup>-1</sup>. Total production cost with an average of Rp 292,611.10 month<sup>-1</sup> respondent<sup>-1</sup>. From the difference, the total income with an average of Rp 107,388.90 month<sup>-1</sup> respondent<sup>-1</sup>.

### **3.4. Value Added Processing of Palm Plant Products**

#### **3.4.1. Gross Value Added**

Based on Table 3. It can be seen that the average gross added value in palm sugar processing business in Minta Village was 2,209,871.03 IDR month<sup>-1</sup> respondent<sup>-1</sup>. The average gross added value in the processing of fresh sap business in Minta Village was 72,000 IDR month<sup>-1</sup> respondent<sup>-1</sup>, and the average gross added value in the processing of palm sugar business in Minta Village was 270,000 IDR month<sup>-1</sup> respondents<sup>-1</sup>. Gross added value comes from the difference between the value of the final product of the palm plant (revenue) and the intermediate costs. Intermediate costs are obtained from the cost of raw materials for palm products plus the cost of auxiliary materials.

#### **3.4.2. Net Value Added**

Based on Table 3. It can be seen that the average net added value in palm sugar processing business in Minta Village was 2,194,526.03 IDR month<sup>-1</sup> respondent<sup>-1</sup>, the average net added value in the processing of fresh sap in Minta Village was 71,033.33 IDR month<sup>-1</sup> respondent<sup>-1</sup>, and the average net added value in the processing of palm sugar business in Minta Village was 260,388.90 IDR month<sup>-1</sup> respondent<sup>-1</sup>. The net value added comes from the difference between the gross value added and the depreciation value. Depreciation value is obtained from the initial value of the equipment minus the final value of the equipment divided by its economic life.

#### **3.4.3. Value Added Raw Materials**

Based on Table 3. It can be seen that the added value of raw materials in the fresh sap processing business was 7,500 IDR liter<sup>-1</sup>. This means that for every one kilogram of raw material used in the production of fresh sap, the added value of raw materials will be 7,500 IDR liter<sup>-1</sup>. The value added of raw materials in palm sugar processing business was 2,859.18 IDR kg<sup>-1</sup>. This means that for every one kilogram of raw material used in the production of palm sugar, the added value of raw materials will be 2,859.18 IDR kg<sup>-1</sup>. And the added value of raw materials in the ant sugar processing business, it was 6,750 IDR kg<sup>-1</sup>. This means that for every one kilogram of raw material used in the production of ant sugar, the added value of the raw material will be 6,750 IDR kg<sup>-1</sup>.

**Table 3.** Details of Value-Added Business of Palm Plant Product Processing in Minta Village

Description	Sum (IDR)		
	Fresh Sap	Palm Sugar	Ant Sugar
Gross Value Added	72,000	2,209,71.03	270,000
Net Value Added	71,033.33	2,194,526.03	260,388.90
Value Added Raw Materials	7,500	2,859.18	6,750
Value Added Per Labor	37,190.08	12,985.50	21,600

Source: Primary Data (processed), 2021.

#### 3.4.4. Value Added Per Labor

Based on Table 3. It can be seen that the average value added per worker in the fresh sap processing business from 5 respondents was 37,190.08 IDR. This shows that every working hour of the fresh sap processing business can provide added value of 37,190.08 IDR. The average value added per worker in palm sugar processing business from 31 respondents was 12,985.5 IDR. This shows that every working hour of palm sugar processing business can provide value added of 12,985.5 IDR. And, the average value added per worker in the ant sugar processing business from 1 respondent of 21,600 IDR. This shows that every working hour of the ants sugar processing business can provide added value of 21,600 IDR. The added value generated is remuneration for all activities carried out by workers in the production process.

## 4. CONCLUSION

Based on the results of research and data analysis in the previous chapter, the authors can draw the following conclusions: The income obtained from the business of processing sap water into palm sugar was on an average of 365,119.84 IDR month<sup>-1</sup> respondent<sup>-1</sup>. The income obtained from the business of processing sap water into fresh sap was on an average of 32,473.33 IDR month<sup>-1</sup> respondent<sup>-1</sup>. And, the income obtained from the business of processing sap water into ant sugar was on an average of 107,388.90 IDR month<sup>-1</sup> respondent<sup>-1</sup>. The average added values of processing business of palm sugar, fresh sap, and ant sugar were 2,859.18 IDR kg<sup>-1</sup> month<sup>-1</sup>, 7,500 IDR kg<sup>-1</sup> month<sup>-1</sup>, and 6,750 IDR kg<sup>-1</sup> month<sup>-1</sup>, respectively.

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