THESIS

ANALYSIS OF ADDED VALUE AND COST OF PRODUCTION ON SAGO PALM (*Metroxylon sagu*) PROCESSING IN KENANGA VILLAGE, BANGKA REGENCY

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SUMMARY

CITRA BELLA SAPTARIYA. Analysis of Added value and Cost of Production on Sago Palm (*Metroxylon sagu*) Processing at Kenanga Village, Bangka Regency (Supervised by **DESSY ADRIANI**).

The purpose of research were (1) to learn about the procurement of raw materials, production processes, and marketing systems in the sago palm agroindustry in Kenanga Village, (2) to calculate the cost of sago in Kenanga village, and (3) to analyze the added value of processing tatch plant into sago palm in Kenanga Village. The research was conducted in Kenanga Village, Sungailiat District, Bangka Regency. Data collection was conducted in November 2022. The method used was a case study and the sampling method was the purposive sampling method. The data collected in this study were primary and secondary data. The results of the study indicate that the raw materials are obtained from thatch middleman, these middleman act as buyers of thatch from farmers. The process of processing thatched stems into sago palm through several stages of the production process, including cutting the stems of thatch, grating, depositing, refining, drying, milling, and packaging. The total time in processing thatch palm stalks into fine sago that is ready to be sold is seven days. The marketing system for sago, namely processing sago in Kenanga Village, has 2 target consumers, including agents for making crackers in Belinyu District, Bangka Regency and out of Bangka Belitung is Palembang. While delivery is done in 2 ways, namely direct delivery and waiting for consumers to come to processing. The cost of goods sell obtained in the research on the sago palm processing in Kenanga Village is Rp2.811.00/Kg. The added value ratio obtained in the processing of thatch stems into sago palm is 83,14%, so that based on the criteria for determining the added value ratio, the processing of sago palm produces a high extra value of more than 40%.

Keyword: income, marketing system, procurement of raw materials

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This thesis was written to fulfill one of the requirements to accomplish a Bachelor's Degree in Agriculture At The Faculty Of Agriculture, Sriwijaya University

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APPROVAL SHEET

ANALYSIS OF ADDED VALUE AND COST OF PRODUCTION ON SAGO PALM (Metroxylon sagu) PROCESSING IN KENANGA VILLAGE, BANGKA REGENCY

THESIS

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Declare that all data and information contained on this thesis is the result of my own research under the supervision of my advisor, unless the source is clearly stated. If in the future found any element of plagiarism in this thesis, then I am willing to accept academic sanctions from Sriwijaya University.

Thus, I make this statement consciously and not under coercion from any party.

Indralaya, January 2022

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BIOGRAPHY

The author was born on September 25th, 2000 in Sungailiat, Bangka Belitung. The author is an only child. Parents named Alm Suhardan and Armayanti. My mother's occupation is housewife.

The author studied at SD Negeri 19 Sungailiat at 5 years 7 months old, then continued to Junior High School 2 Sungailiat. After that, the author continued her education to Senior High School 1 Sungailiat. The author is studying at Sriwijaya University Agribusiness Study Program batch 2018.

During her education from Kindergarten to College, Alhamdulillah, the author has achieved many achievements both in academic and non-academic fields. During his schooling, the author never dropped out of the top 3 in the class, the author also won second place in FLS2N at the provincial level, won a bronze medal at the national level in Banten, won the quiz competition at the high school level, and became the head of the Indonesian language and literature section at the high school student council in 2016.

Currently, the author is participating in the Agricultural Socio-Economic Student Association (HIMASEPERTA) in the Interest and Talent division as the secretary of the service. The author's goal to join an organization like this is because the author wants to dig deeper into the potential that the author has in organizing and hopes that in the future it can be useful until the author works later.

The author has also been a lecturer assistant in the Business Fundamentals, being a lecturer assistant makes the author more enthusiastic in learning, because the author wants to show that the author deserves to be a lecturer assistant who can help and provide knowledge that has been obtained to younger siblings. Being a lecturer assistant makes the author widely known by his juniors, they also ask how to become a lecturer assistant, this makes the author very happy because he has been a lecturer assistant in one semester.

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Praise and gratitude are only devoted to Allah SWT. Shalawat and greetings may always be poured out on the Messenger of Allah as His messenger. Thanks to the abundance of His grace and grace, which has made all matters smooth so that the writer can complete this thesis.

The title of thesis is "Analysis Of Added Value And Cost Of Production On Sago Palm (*Metroxylon Sagu*) Processing In Kenanga Village, Bangka Regency". In the preparation of this thesis could not be separated from the guidance, assistance and advice from various parties, therefore on this occasion the author would like to thank:

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8. My closest friend Duta Suhendra who has helped and always encouraged me to always be the best.
9. Friends of the 2018 Agribusiness Study Program students who have given each other support, enthusiasm and prayers to the author.

The author realizes that there are still many shortcomings that need to be improved. Therefore, the authors really expect constructive criticism and suggestions for the perfection of writing in the future. Finally, I hope this thesis can be useful for all parties. Amen Yarrobbal Alamin.

Indralaya, Januariy 2022

Citra Bella Saptariya

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CHAPTER 1
INTRODUCTION

1.1. Background

Indonesia is a country that has a land area of 190.923 million ha, which 70.8 million hectares is used for cultivation activities such as fields, rice fields, and plantations. Agriculture is the main sector that supports the Indonesian economy, in addition to fulfil society's consumption needs and also used for domestic and export industrial needs (Amilia *et al.*, 2017).

Biodiversity owned by the Indonesia provides high comparative added value so that it can provide good opportunities for the development of the agricultural sector. Several subsectors in agriculture, namely food crops subsector, plantation subsector, forestry subsector, horticulture subsector, fishery subsector and livestock subsector can be developed into subsectors that contribute greatly to supporting Indonesian state income. This is supported by the number of provinces in Indonesia that provide supplies of various types of food crops that can be processed into products that have their own added value for these plants.

Indonesia has various types of food crops, including sago or palm, beans, tubers such as cassava, sweet potato, and others. Sago palm is a food crop subsector commodity in the agricultural sector that has potential in the national economy. This commodity actually has promising prospects as a food ingredient and raw material for the food industry, in fulfil the growing food needs due to the increasing population, and in increasing the average income of the population and creating jobs.

Sago or sago palm (*Metroxylon sago*) is one of the food commodities that has a lot of carbohydrate content, this makes sago palm as a staple food in several regions in Indonesia (Harsanto, 2015). Sago palm is an annual plant that can produce sustainably for decades. Most of the area of sago palm in Indonesia is natural standing plants. Sago palm plants are spread in wetlands almost all provinces in Indonesia, from Papua to Aceh (Zakaria *et al*, 2017). Indonesia is a country that has the largest sago palm area and the largest genetic diversity in the world (Bintoro *et al.*, 2010).

The spread of thatch plant in Indonesia in 2019 has reached five production centers, namely Aceh, Riau, South Kalimantan, Maluku, and Papua. The potential development carried out has reached 5,5 million hectares with a total area utilized of 314.663 ha with the resulting production of 465.495 tons. This can be seen from Figure 1.1.

Source: Directorate General of Plantations, 2019

Figure 1.1. Spread of Rumbia or Sago Plants in Indonesia in 2019

One of diversification form of thatch plants using in food sector is sago palms. This form of diversification provides added value for the sago palms commodity. The added value of an agricultural commodity can never be separated from the role of processing and agribusiness. Agriculture industry is very attached to agribusiness system, the role of agribusiness in an agricultural country like Indonesia is enormous. It is because agribusiness is complete concept of the production process, product processing, marketing and other activities related to agricultural activities. Through this limitation, it is hoped that there will be a strong economic or industrial condition supported by the agricultural sector, so agribusiness takes an important role in it. As a driving force for agricultural development, agribusiness (and industry in agriculture) is expected to be able to take an important role in regional development activities, both in the target of equitable development, economic growth and national stability (Soekartawi, 2013) *in* (Safitri, 2016).

Processing especially in agriculture is one of the subsystems in the agribusiness system which is an *off farm*. The agribusiness system consists of

input subsystems (upstream processing), farming (agriculture), output (downstream industry), marketing, and support. The existence of processing sago palm will get further action in the form of a production process. Thatch will have added value if it has been processed into finished products or semi finished products. Thatch is an example of an perishable agricultural commodity after harvesting. Good processing is certainly the right solution to increase the value of a product. Thatch can be processed into various kinds of processed, one of which is thatch stems can be used as sago palm. After going through various stages of processing, the price obtained from sago palm is relatively increased compared to that of unprocessed sago palm. The following is an illustration of the price of sago palm in Figure 1.2.

Source: Directorate General of Plantations, 2019

Figure 1.2. The Average Price of Sago in Indonesia in 2019

According to Zakaria (2017) research conducted by the international community is not limited to the potential of sago as a food substitute for rice, but also in the chemical and medical industry sectors. The discovery of the benefits of sago in the industry can encourage increased demand for sago and will have an impact on the economic value of the sago palm. This creates a negative stigma that undervalues thatch commodity, making the commodity seen and used as a source of livelihood for the welfare of the people.

One of the areas have rapid development in the medium sized business in processing thatch into sago is in Kenanga Village, Bangka Regency, Bangka

Belitung Province. The development of processing in this area has quite a big influence on Bangka Regency because the production can provide added value for thatch which previously only took the leaves to be used as the roof of a cottage or house roof. The sago palm industry in Kenanga Village is a small industrial scale industry, which is its labor does not reach five workers. Processing is carried out using several machines, and the drying process is carried out still relying on sunlight. Even though it is a medium scale business, the processing of sago palm is the first business in Kenanga Village that uses sago palm plants to make sago. Based on this description, the author wants to analyze study on "Analysis of Added value and Cost of Production on Sago Palm (*Metroxylon sagu*) Processing at Kenanga Village, Bangka Regency ".

1.2. Problem Statement

Based on the description that has been explained above, in this study several problems were formulated are asa follows:

1. How is the procurement of raw materials, production processes, and marketing systems for sago palm in Kenanga Village?
2. How much is the cost of goods of sago palm sago in Kenanga Village?
3. How much is the added value obtained from processing thatch into sago palm in Kenanga Village?

1.3. Objectives and Uses

Based on the problems described above, the objectives of this study include:

1. Learn about the procurement of raw materials, production processes, and marketing systems for the processing of sago palm in Kenanga Village.
2. Calculating the cost of sago palm in Kenanga Village.
3. Analyzing the added value of processing thatch into sago palm in Kenanga Village.

Based on the problems and objectives above, the uses of this research are to:

1. Provide information on the procurement of raw materials, production processes, and marketing systems for the processing of sago palm in Kenanga Village.

2. As an evaluation material for entrepreneurs to see the added value and cost of the thatch plants.
3. As a source of information for future readers and researchers if they are going to conduct research on the same theme.

CHAPTER 2
LITERATURE REVIEW

2.1. Literature Review

2.1.1. Agribusiness

Agribusiness is a business in agriculture that is engaged in the upstream and downstream sectors. The meaning of "upstream" and "downstream" is a view of the food supply chain. Agribusiness learns about ways and strategies to earn profits by managing from the early process of cultivation to the marketing stage (Isnaini *et al*., 2018).

Antara (2009) states that agribusiness comes from the word agribusinees, where agri = agriculture means agriculture and business means business or activity that generates profits. So simply agribusiness (*agribusiness*) is defined as a business or agricultural activity and related to profit oriented agriculture. If fully defined agribusiness is an activity related to handling agricultural commodities in a broad sense, which includes one or the whole of the production chain, processing inputs and outputs of production, marketing of agricultural inputs and outputs and supporting institutions for activities. Agribusiness management in principle is the application of management in the agribusiness system. Therefore, someone who wants to enter the field of agribusiness must have management concepts in agribusiness which includes the notion of management, management functions, management levels, management principles and management fields (Firdaus, 2007) *in* (Perdian, 2018).

The characteristics of agribusiness have special characteristics so that agribusiness management is different from other management. According to Downey (2014) there are several things that differentiate agribusiness management from other management, as follows: (1) The business in the agribusiness sector is relatively large, starting from every existing business, both from producers and consumers. (2) The actors in the agribusiness business cover the whole. (3) The average agribusiness related to farmer entrepreneurs either directly or indirectly. (4) Agribusiness based businesses are on a small to large scale. (5) Having a fairly fierce market competition due to the lack of consumers.

(6) The existence of the philosophy of "*The Way of Life*" makes agribusiness businesses lagging behind other businesses. (7) Agribusiness businesses tend to be family run businesses. (8) The agribusiness sector is oriented to the wider society. (9) Agribusiness business is a business whose production is seasonal. (10) The agribusiness business is a business that is based on botik and abiotic. (11) Government policies are directly focused on the agribusiness sector.

2.1.2. Subsystem of Procurement and Distribution of Production Facilities

According to Suparta (2015) the components of agribusiness actors have the determination and ambition to produce good quality products. The subsystem of procurement and distribution of production facilities is expected to be able to produce and provide good quality production facilities in order to launch quality farming products as well, provide good service for farming, foster farmers in technical production, provide the best facilities in the farmer training process, provide quality information and indeed useful for farmers, and hoped that farmers and other related parties can carry out business and develop it so that farmers can benefit from each activity.

The subsystem of procurement and distribution of production facilities is also often interpreted as the upstream sector, which is an activity that provides new innovations for producers, produces and distributes agricultural products (Saraqih, 2013). The upstream sector of agribusiness also includes industries that produce capital goods in various industries such as the food industry, livestock industry, chemical industry, and machinery industry.

2.1.3. Thatch Plant (Sago Palm)

Sago palm (Metroxylon sago) is one of the agricultural products that exist in Indonesia as a food ingredient that has benefits and as an energy-producing food substitute for rice. In Indonesia, sago palms have various names, namely sago palm, Kirai (Sundanese), ambulung kersulu (Javanese), and Lapia (Ambonese)

(Ruddle et al., 1978). Sago palm often grows in humid areas. According to Bintaro et al., (2010) sago palm is a potential plant to be developed in tidal areas,

this is because the productivity is very high in the area from 20 to40 tow/ha/year with good management. The classification can be seen in Table 2.1.

Table 2.1. Classification of Sago Palm

Classification	Description
Order	*Spadiciflora*
Family	*Palmae*
Genus	*Metroxylon*
Species	*Metroxylon sagu*

Source : Syakir, 2013

The morphology of sago palms is usually live in clumps, consisting of 1-8 sago stalks with 5-7 tillers. The height of the tree can reach 8-17 meters according to the type and where the plant grows. According to Haryanto et al., (2015) sago palm is the most important part of this plant because the sago palm can be processed into sago palm which can be used as raw material for the food industry, livestock feed, alcohol, and other industries. In general, the lower part of the stem is larger and contains higher starch than the upper part of the stem. Research results from the Directorate of Nutrition, Ministry of Health (1995) showed that some of the nutritional content of sago palm was higher than other food ingredients. The following is a comparison of the nutritional value of sago palm with other food ingredients in Table 2.2.

Table 2.2. Nutritional Value of Sago with Other Food Ingredients per 100 g

Composition of	Sago	Rice	Corn	Cassava	Potatoes
Calories (cal)	357	366	349	98	71
Protein (g)	1,4	0,4	9,1	0,7	1,7
Fat (g)	0,2	0,8	4,2	0,1	0,1
Carbohydrates (%)	85,9	80,4	71,7	23,7	23,7
Calcium (mg)	15	24	14	19	8
Iron (mg)	1,4	1,9	2,8	0,6	0,7
Teomine (mg)	0,01	0,1	0,29	0,04	0,09

Source: Directorate of Nutrition Ministry of Health, 1995

2.1.4. Derivative Products

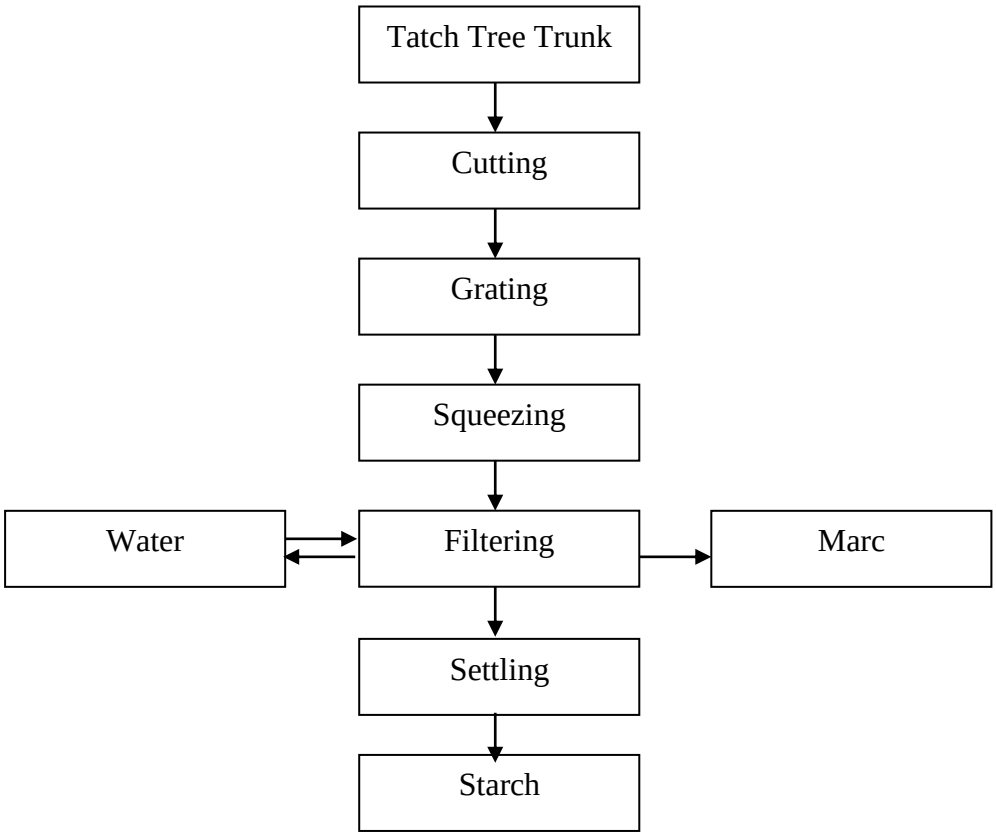
Sago palm that have been processed in such a way will produce various products that have added value for the thatch plant. Sago palm is a source of calories for the body which also contains minerals and phosphorus. The main component contained in sago palm is starch. Starch is a carbohydrate produced from sago palm as a raw material for making food. Starch is in the form of granules or granules that are shiny white, tasteless, odorless, and if touched will feel like a mat. Starch granules have different shapes according to the source of the starch. The starch of sago palm is identical with an oval elliptical shape and a relatively larger size compared to cereal starch (Pangloli, 2006).

2.1.5. Economic Overview of Sago Palm

Processing of thatch into sago palm provides added value that can directly contribute to increasing the income of thatch farmers and industry players. There is cooperation between thatch farmers, industry players with thatch raw materials and market players who meet domestic and foreign market demands (Johan, 2011). The development of the sago palm industry can encourage the development of small and medium-sized processing. The processing subsystem is a continuation of the production subsystem that can increase the value of a plant. Simple technology that is engineered in such a way can simplify processing procedures so that more effective and efficient. Processing capacity needs to be adjusted to the availability of raw materials so that the input and output will be balanced according to the economic value of a product.

2.1.6. The Process of Making Sago Palm

Sago is made from the pith of the sago palm that has gone through the stages of the sago-making process. In general, the process of making sago palm starts from cutting down the thatched tree, cutting and refining the thatched trunk, grating, squeezing, filtering, settling, and packaging (Johan, 2011). The process of processing sago palm (sago palm) into sago palm sago palm can be seen in Figure 2.1.



Source: Rahayu, 2016

Figure 2.1. Sago Palm Production Process

2.1.7. Marketing Conception

Marketing is an organizational function, set of processes that create, communicate, deliver value to customers, and manage customer relationships in ways that benefit the organization and its stakeholders (Tjiptono et al., 2008).

Marketing is customer-oriented, with the assumption that consumers will only be willing to buy products that meet their needs and wants and provide satisfaction. The marketing concept consists of four pillars, namely: target market, customer needs, integration marketing or integration that can generate profits. According to Kotler (2009) there are four concepts in marketing, namely as follows.

1. Production concept is a concept oriented to the production process or processing operating system. Manufacturers believe that consumers will only buy products that are cheap and easy to obtain. Entrepreneurs believe

that consumers will be attracted to products that have constant product availability and low prices. This orientation is important for expanding the market for a product.

2. The product concept is the company assumes that consumers will choose products that have the best quality. Companies will compete to produce quality works or products.
3. Sales concept is concept oriented to the level of sales, namely the company assumes that consumers must be influenced by products and producers in order to increase sales.
4. The marketing concept is concept based on consumer actions that will only buy products that are worth buying or in accordance with consumer desires. Consumers will buy products to consumers who give satisfaction both in terms of service, communication, quantity and quality of the product. Good marketing is profit-oriented marketing. Manufacturers will provide satisfaction to consumers with a record that is commensurate with the company's expenses.

2.1.8. Cost of Goods Sold (COGS)

Cost of Goods Sold (COGS) is the price required by producers to determine the minimum limit for the selling price of an item. The calculation of the cost of production must be carried out accurately and precisely so that the production party does not experience losses in conducting their business (Setiadi, 2003).

There are three cost elements in determining the cost of production, namely:

1. Raw Material Cost

   Raw material cost is the basic cost in a production. This cost is used to buy the main materials needed in one production. The raw material cost is the largest cost used in processing a product.

2. Direct Labor Cost

   Direct Labor Cost are costs that are given as wages for the work of employees either directly or indirectly.

3. Factory Overhead Cost

Factory overhead costs are costs that can not be directly on the results of production. Factory overhead costs are components of costs incurred in the production process in addition to raw material costs and direct labor costs. Factory overhead costs are divided into two, namely fixed costs and variable costs. Fixed costs in factory overhead costs whose amount is not affected by the level of production such as depreciation costs of buildings, machinery and other equipment in production. While variable costs mean costs that are influenced by the size of the level of production such as the cost of electricity, fuel and others.

In determining the Cost of Goods Sold (COGS), it can be done in two ways, as follows:

a) *Variable Costing* which is a method of determining the price by only entering variable costs, fixed costs are used as periodic. Based on this method, the elements of calculating the cost of production consist of:

Raw Material Costs	……..
Labor Cost	……..
Factory Overhead Costs	…….. +
Total Production Cost	……..

b) *Full Costing* which is a way of determining the Cost of Goods Sold (COGS) by taking into account all costs, both fixed costs and variable costs. Based on this method, the elements of calculating the cost of production consist of:

Raw Material Costs	……..
Direct Labor Cost	……..
Variable Factory Overhead Cost	……..
Fixed Factory Overhead Cost	…….. +
Total Production Cost	……..

2.1.9. Value Added

Value added is the result or value of a product that has processing both traditional and modern processing. Added value can also be interpreted as an increased selling price as a result of the treatment of the main ingredients of each production. In a processing, value added can be interpreted as the difference of the value of the product and all the values of raw materials except for labor. Meanwhile, the margin is the difference between the value of the product and raw materials only (Hayami *et al.,* 1987).

Value added analysis using the Hayami method has the advantage of knowing how much added value, productivity and *output* of the product is. Using the Hayami method can also find out the amount of remuneration to the *owner* and the use of this method can be applied to subsystems outside of processing such as marketing (Suprapto, 2006). There are two ways to calculate the added value, namely processing added value and marketing added value. Factors affecting the added value of processing are technical and market factors (Hayami *et al.,* 1987).

Added value in processing is something that must be created by an agricultural-scale company in order to get more profit. The added value of a product depends on the treatment of the main ingredients of each product. Good treatment of product greatly affects the selling price of the product. The higher the quality of the product, the higher the added value of the product. The added value can be said to be large if it reaches a value of 50% and if it is less than 50% then the added value is still said to be small (Sudiyono, 2004). If the processing of an item is good quality, it will produce a quality finished product or semi-finished product. With an increase in economic value after being processed, an item or product will have a higher economic value. In calculating how much added value can be calculated using the formula in Table 2.3.

Table 2.3. Framework for Calculation of Value Added Using Hayami Method

No.	Variables	Value
I.	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 Prices (Rp)	(6)
7.	Labor Wages (Rp/HOK)	(7)
II.	Revenue and Profit	
8.	Raw Material Prices (Rp//kg)	(8)
9.	Contribution of Other Inputs (Rp/kg)	(9)
10.	Output Value (Rp/kg)	(10) = (4) x (6)
11.	a . Value Added (Rp/kg)	(11a) = (10) – (9) – (8)
		(11b) = (11a/10) x 100%
12.	b. Value Added Ratio (%)	(12a) = (5) x (7)
		(12b) = (12a/11a) x 100%
13.	a. Labor Income (Rp/kg)	(13a) = (11a) – (12a)
		(13b) = (13a/11a) x 100%
III.	b. Labor Share (%)	
14.	a. Profit (Rp/kg)	(14) = (10) – (8)
		(14a) = (12a/14) x 100%
		(14b) = (9/14) x 100%
		(14c) = (13a/14) x 100%

Source: Sudiono, 2004

According to Hubeis (1997) *in* Arrizki (2018) there are three indicators for determining the added value ratio, including the following:

1) If the value added ratio is < 15%, then the added value is low.
2) If the value added ratio is 15%-40%, then the added value is moderate.
3) If the value added ratio is > 40% then the added value is high.

2.2. Approach Model

Model The approach model used in this study is a diagrammatic approach model which can be seen in Figure 2.2. below this.

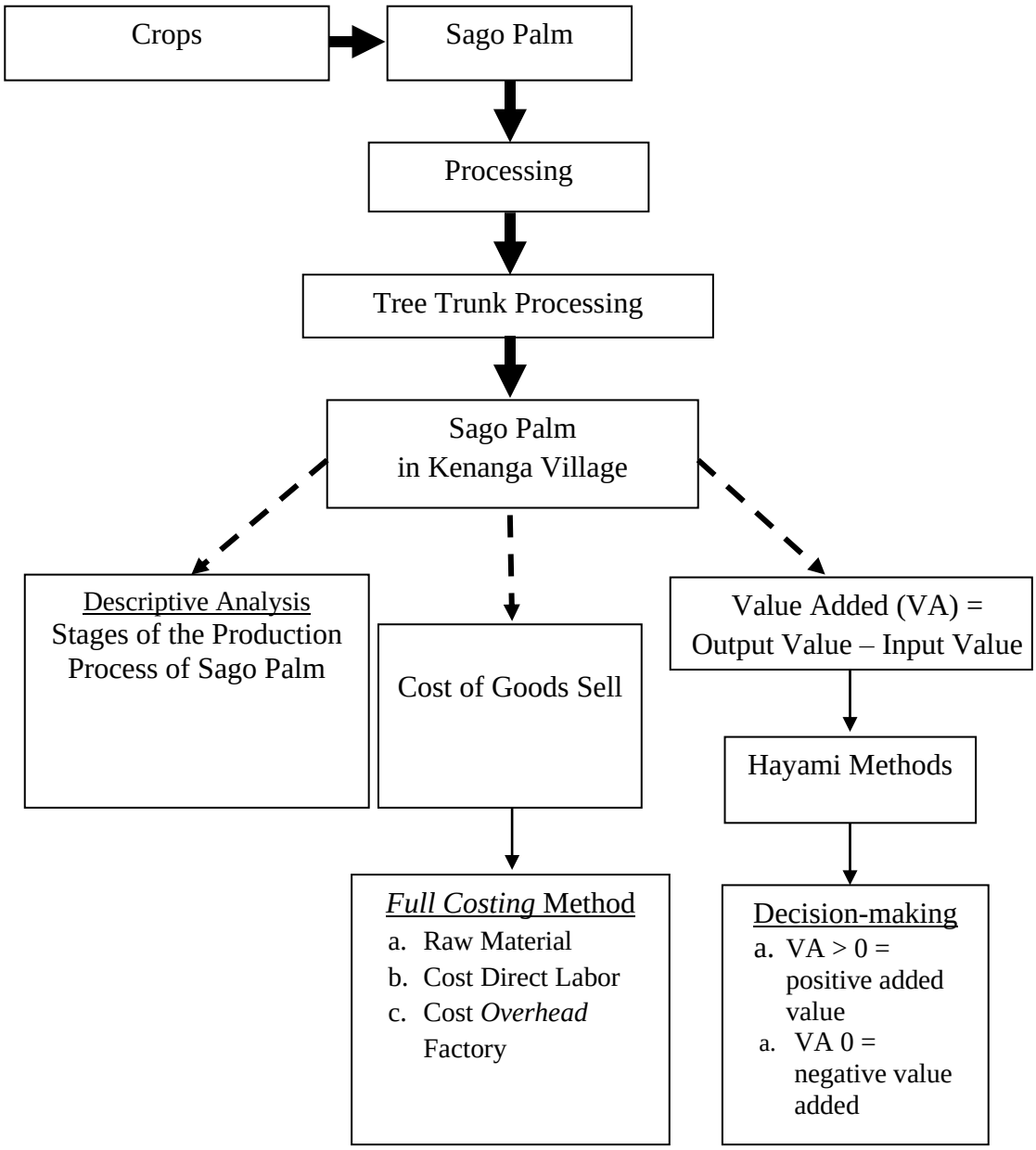


Figure 2.2. Schematic Model Approach

Information:

= Generate

= Activity Flow

= Affect

2.3. Hypothesis

Based on the description above, the hypothesis in this study is suspected that the processing of sago palm provides a high added value ratio, which is more than > 40%.

2.4. Operational Limitations

Operational limits are needed so that there is no misunderstanding regarding the meaning of the terms used in this study, the following are operational definitions used, including the following:

1. Processing is a small industry in the agriculture field that processes sago palm stems into sago.
2. Sago palm is flour produced from sago starch that has gone through the production stages.
3. The production is the amount of sago palm produced by processing in Kenanga Village.
4. The selling price is the selling price of sago palm in processing in Kenanga Village (Rp/Kg)
5. Revenue is the revenue received by the processing of sago palm in Kenanga Village (Rp/month)
6. Total production cost is the total cost incurred by the processing of sago palm in the sago palm production such as costs for raw materials, direct labor costs, depreciation costs for goods, packaging costs in Kenanga Village (Rp//month)
7. The raw material is the basic material for making sago palm in Kenanga Village (Kg).
8. The depreciation calculation uses the straight-line method (Rp/month).
9. Profit is the total revenue minus the total cost incurred or called the income from processing sago palm in Kenanga Village (Rp/month).
10. Factory Overhead Costs are costs that are not used up in one production (Rp/month).

11. Variable Factory Overhead Cost are costs that must be incurred every time production and the amount can change according to changes in production levels (Rp/month).
12. Investment is the cost used for the construction of buildings, tubs, and several tools in the processing of sago palm which gives an increase in the investment value or profit (Rp/month).
13. Output is processed thatch stems into sago palm in Kenanga Village (Kg).
14. Input are materials that are included in the production process in the processing of sago palm (Kg).
15. Raw materials costs is the cost incurred to buy thatch stalks (Rp/Kg)
16. Direct labor costs are costs used to pay employees in the processing of sago palm (Rp/month).
17. The cost of goods manufactured is the price obtained by dividing the total cost of production by the amount of production in the processing of sago palm in Kenanga Village (Rp/Kg).
18. Added value is the additional value of the product due to the treatment of thatch stems that are processed into sago per Kg.

CHAPTER 3
RESEARCH IMPLEMENTATION

3.1. Place and Time

This research was carried out in a small sago palm industry in Kenanga Village, Sungai Liat District, Bangka Regency, Bangka Belitung Province. The location of the research was determined intentionally with the consideration that the sago palm business unit in the Kenanga area was the first people's business to use sago palm to make sago. Previous researchers have conducted pre-research which includes interviews related to the data listed in the introduction. The time of the research was carried out in November 2022.

3.2. Research Methods

The method used in this research is case study. Case studies are used to obtain and investigate an event that refer to actions within an institution, in this study the processing of sago palm in Kenanga Village. The analysis of the case study will be carried out in depth and detail regarding the object of research. This case study method was carried out by interviewing the owners of sago palms and labor in the industry as well as owners and middleman of sago palm plants.

3.3. Sampling Method

The sampling method used in this research is *purposive sampling method*. This method is used to take research samples with researchers determining the samples themselves to be taken because there are considerations and based on certain criteria. Researchers choose people as samples who have detailed knowledge related to the research topic (Martono, 2014). The respondents selected were the owner of the sago industry who would answer about the cost and added value of sago and three employees who worked in the small industrial business who would explain in detail about the procurement of raw materials, the production process of sago, and the sago palm marketing system and the owners and middleman of the thatch plants who answered about the description of the thatch plant business.

3.4. Data Collection Method

Data collection method is the method used to collect research data. Collecting data in this study use primary and secondary data. The data in this study were obtained from observations, interviews and literature studies. Observation is done by observing directly the object that is the target of research. Interviews were conducted by conducting direct questions and answers with the owners of the sago palm industry and employees who assist the processing of sago palm who have knowledge of the production process. While the study of literature is the collection of sources such as books, theses, and journals related to research on the analysis of added value and cost of goods manufactured.

3.5. Data Processing Methods

Data analysis used by researchers in this study is qualitative and quantitative methods. The qualitative method in the formulation of the first problem is a descriptive method, which is used to obtain information related to the production process of sago palm. Quantitative analysis in this study was used to calculate the cost of goods and the added value of sago palm production in Kenanga Village. The quantitative method for calculating the cost of production is the full costing while the Hayami method is used to calculate the added value.

To answer the first objective of this research is to use a descriptive method which is detailed or elaborative. In this descriptive method, the researcher asked three employees of the processing and the owner of the thatched plant as well as the collector of the sago palm related to the income of the thatch collectors, the procurement of raw materials, the production process, and the marketing system of sago palm.

To answer the second objective is use the full costing. The full costing way of determining the cost of production by taking into account all costs, both fixed costs and variable costs. Based on this method, the elements of calculating the cost of production consist of:

Raw Material Cost ……..
Direct Labor Cost ……..
Variable Factory Overhead Cost ……..
Fixed Factory Overhead Cost …….. +
Total Production Cost ……..

Cost of Goods Manufacture = $\frac{Total\ Production\ Cost}{Production\ Quantity}$

To answer the third objective using the hayami method. Hayami method is one way to calculate the added value of a product. The calculations in the hayami method are in Table 3.1.

Table 3.1. Added Value with Hayami Method

No.	Variables	Value
I.	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 Prices (Rp)	(6)
7.	Labor Wages (Rp/HOK)	(7)
II.	Revenue and Profit	
8.	Raw Material Prices (Rp//kg)	(8)
9.	Contribution of Other Inputs (Rp/kg)	(9)
10.	Output Value (Rp/kg)	(10) = (4) x (6)
11.	a . Value Added (Rp/kg)	(11a) = (10) – (9) – (8) (11b) = (11a/10) x 100%
12.	b. Value Added Ratio (%)	(12a) = (5) x (7) (12b) = (12a/11a) x 100%
13.	a. Labor Income (Rp/kg)	(13a) = (11a) – (12a) (13b) = (13a/11a) x 100%
III.	b. Labor Share (%)	
14.	a. Profit (Rp/kg)	(14) = (10) – (8) (14a) = (12a/14) x 100% (14b) = (9/14) x 100% (14c) = (13a/14) x 100%

Source: Sudiono, 2004

According to Hubeis (1997) in Arrizki (2018) there are three indicators for determining the added value ratio, including the following:

If the value added ratio is < 15%, the added value is low.

If the value added ratio is 15%-40%, then the added value is moderate.

If the value added ratio is > 40% then the added value is high.

CHAPTER 4
RESULTS AND DISCUSSION

4.1. General Condition of Research Area

4.1.1. Characteristics of the Research Area

Kenanga Village is one of the villages located in Sungai Liat District, Bangka Regency, Bangka Belitung Islands Province. Bangka Belitung are divided into six regencies and one city located on two large islands. Bangka Island consists of Bangka Regency, West Bangka Regency, Central Bangka Regency, South Bangka Regency, and Pangkalpinang City. Belitung Island consists of Belitung Regency and East Belitung Regency. Bangka Regency was formed based on RI Law No. 28/1959 concerning the Establishment of Level II Regions and Municipalities in South Sumatra (State Gazette of the Republic of Indonesia 1959 No.73, Supplement to the State Gazette of the Republic of Indonesia No. 1821), which is part of the South Sumatra Province. The existence of Law No. 27 of 2000 concerning the establishment of the Province of the Bangka Belitung Islands is valid so that Bangka Regency is part of one of the regencies in the Province of the Bangka Belitung Islands. After some time of reform and regional autonomy according to Law No. 5 of 2002, Bangka Regency was divided into West Bangka Regency, South Bangka Regency, and Central Bangka Regency. Bangka Regency has a land area of approximately 295,068 hectares and an ocean area of approximately 196,002.8 hectares.

The land area is divided into regencies and cities, namely:

1. Bangka Regency has an area of 2,950.68 square kilometers.
2. West Bangka Regency covers an area of 2,820.61 square kilometers.
3. Central Bangka Regency covers an area of 2,155.77 square kilometers.
4. South Bangka Regency has an area of 3,607.08 square kilometers.
2. Belitung Regency covers an area of 2,293.61 square kilometers.
3. East Belitung Regency covers an area of 2,506.91 square kilometers.
4. Pangkalpinang City has an area of 89.40 kilometers.

The boundaries of the Bangka Regency area are as follows:

a) The north is bordered by the Natuna Sea.
b) The west is bordered by West Bangka Regency, Kelabat Bay and the Bangka Strait.
c) The south is bordered by Pangkalpinang City and Central Bangka Regency.
d) The east is bordered by the Natuna Sea.

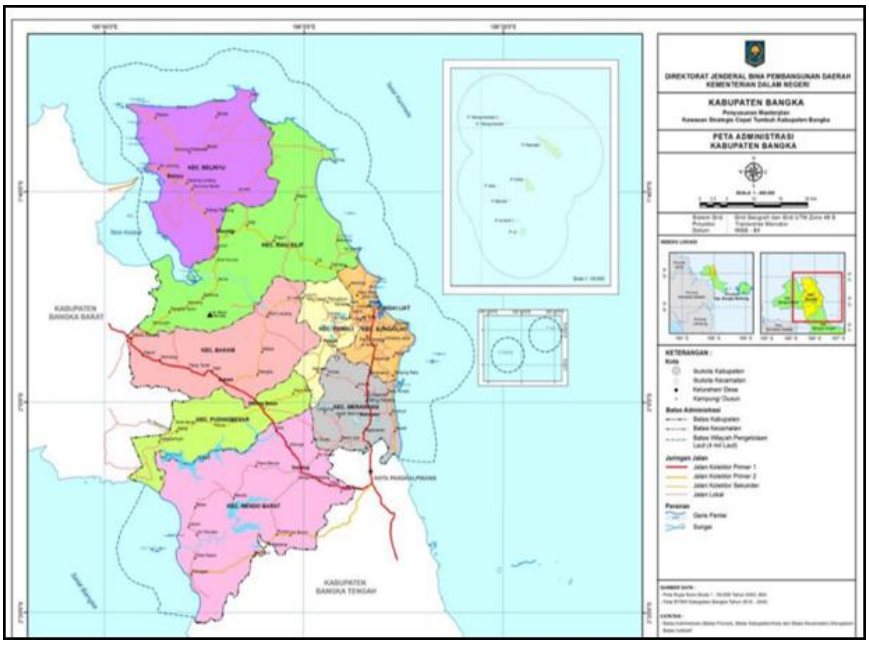


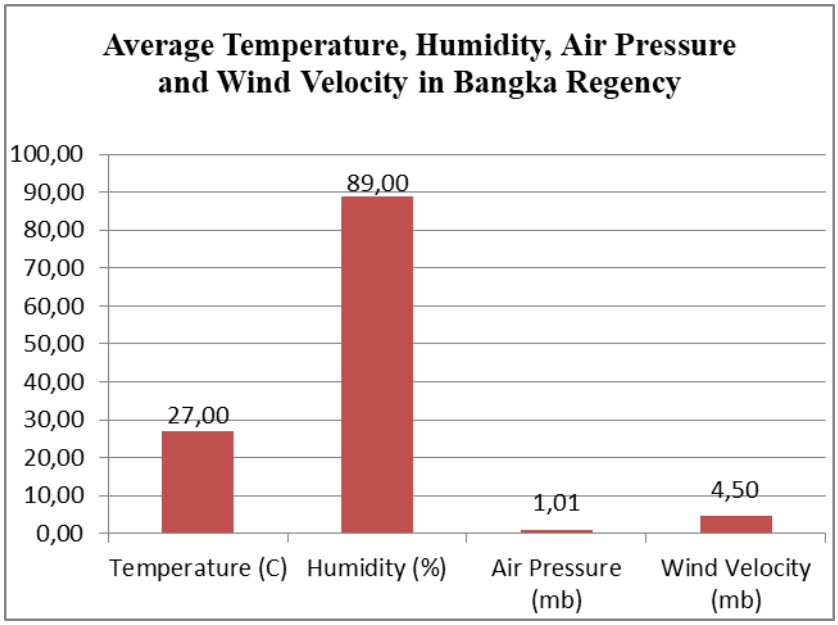
Figure 4.1. Research Area Map

Bangka Regency is recorded to have eight sub-districts including Sungai Liat District, Belinyu District, Riau Silip District, Bakam District, Pemali District, Merawang District, Puding Besar District and Mendo Barat District with a total of 9 villages and 62 villages.

Geographically, Bangka Regency is located between 1°300'-2°21' South Latitude and 105°38'-106°18' East Longitude. The climate in Bangka Regency often experiences changes, namely wet months and dry months. In certain months during the rainy season (wet month), 40% of villages/kelurahan located on the seafront will be flooded. Whereas in the dry month (hot month) there will be a drought or run out of water.

According to the geographical aspect of Bangka Regency, the humidity in this district is still classified as good for health and agriculture. In the figure, it can

be seen that the temperature obtained is around 27°C, the humidity is around 89 percent, the air pressure is around 1.01 mb, while the wind speed is around 4.50 mb.



Source: BPS Kabupaten Bangka, 2022

Figure 4.2. Average Temperature, Humidity, Air Pressure and Wind Speed

In general, the soil condition in Bangka Regency is acidic, which is below pH 5, but has a high aluminum content. Bangka Regency is also rich in tin, so many people get income from selling tin. Bangka Regency has several quality timber plants so that many are traded such as meranti wood, ramin wood, balong wood, and Kerengas wood.

Bangka Regency has many small industries in agriculture and other fields. One of them is in Kenanga Village, Sungailiat District, Bangka Regency. Kenanga village is famous for being a village that has many people's businesses based on *home industry*, small-scale businesses, as well as large-scale businesses such as company, especially in agriculture, one of which is the processing of sago palm which is discussed in this study. Kenanga Village is located at the end of Sungai Liat District, so Kenanga Village is located in the middle of the busy road between Sungai Liat District and Pangkalpinang City.

4.1.2. Goverment

Bangka Belitung government has a vision and mission to achieve the desired target for 2017-2022. The vision of the Bangka Belitung Province is taken from the vision of the governor and deputy governor who were chosen, among others, "Babel Sejahtera, an Advanced Province, Which Excels In The Field Of Agropolitan and Maritime Innovation with Efficient and Fast Technology-Based Governance and Public Services".

In an effort to achieve this vision, there are several missions set for the development of Bangka Belitung, including the following.

1. Increasing regional potential-based economic development; this statement means a) the welfare of the community in terms of economic growth through increased production, especially in the innovation-based economy. Economic development is also seen from the distribution of community income through improving the welfare of the workforce, rural community welfare and poverty alleviation in the community and b) based on regional potential, namely prioritizing the improvement of the sustainable agriculture, tourism, fisheries, and mining sectors, as well as regional processing and trade.
2. Realizing quality regional infrastructure and connectivity; This statement means that a) Infrastructure is infrastructure development to support the development of regional potential and improving the quality of public services and b) Regional connectivity is intended so that all regions in the Bangka Belitung Islands Province are connected, so that the mobilization of population, goods and services is faster, efficient and of high quality.
3. Increasing superior and reliable human resources; the purpose of this statement is a) human resources are all people in the Bangka Belitung and b) superior and reliable are having good competence level and competitiveness education as measured by the average length of schooling and the ability to compete in the midst of development.
4. Improving public health; This statement means that public health refers to the level of health of the entire community in the Bangka Belitung as measured by life expectancy.

5. Realizing good governance and democratic development; means that good governance can be seen in a clean and responsible bureaucracy, an effective and efficient bureaucracy, and a bureaucracy that provides quality public services. Democracy development is development that is focused on increasing people's civil liberties, increasing people's political participation and democratic system.
6. Improving disaster control and environmental quality; means a) disaster management is the ability and speed to control disasters starting from before a disaster occurs, when a disaster occurs and after it occurs during a disaster to minimize casualties and damage due to disasters and b) environmental quality is development carried out with a sustainable development approach with taking into account the burden and existence of the environment as well as efforts to restore the damaged environment.

Apart from the vision and mission of Bangka Belitung, there are different leaders in each district, specifically Bangka Regency led by Mr. Mulkan SH,MH. Bangka Regency has 8 sub-districts including Sungailiat District, Belinyu District, Riau Silip District, Bakam District, Pemali District, District Merawang, Puding Besar and Mendo Barat sub-districts with 9 villages and 62 villages.

The Central Statistics Agency (2022) states that in 2020 the number of members of the DPRD of Bangka Regency is 35 people, with 29 male members and 6 female members. The number of PNS (Civil Employees) in 2020 is 3,837 people with 2,327 female gender and 1,510 male gender. The realization of the regional income of Bangka Regency in the 2020 fiscal year is 1,136,647,404.40 rupiah.

4.1.3. Population and Employment

Residents of Bangka Regency are people who live in the geographical area of Bangka Regency for six months or more and or people who live less than 6 months but aim to settle down. The population system is seen from marital status, namely unmarried, married, divorced, and divorced. According to the Central Bureau of Statistics (2022), the population of Bangka Regency in 2020 is 326,265

people, with 168,526 men and 157,379 women. The following is a breakdown of the total population of each sub-district in Bangka Regency, which can be seen in Table 4.1.

Table 4.1. Total Population in Each District in Bangka Regency,

District	Population by District (Soul)	
	2019	**2020**
Mendo Barat	48. 853	51. 133
Merawang	29. 743	30. 596
Puding Besar	19. 484	19. 419
Sungailiat	91. 822	92. 883
Pemali	33. 379	34. 705
Bakam	18. 473	19. 039
Belinyu	49. 229	50. 200
Riau Silip	27. 773	28. 290
Bangka	318. 756	326. 265

Source: Central Bureau of Statistics Kabupaten Bangka, 2022

The total population of Bangka Regency aged 15 years and over or the Working Age Population in 2020 is 250,265 people with a percentage of 63.93% of the Working Age Population being the workforce (people who are working and or are looking for work) and 36.07% are residents who are not in the labor force (school and or take care of the household). The Labor Force Participation Rate (TPAK) of Bangka Regency in 2020 is 63.93% of the economically active working age population, while the open unemployment rate in Bangka Regency is 5.42 percent (BPS, 2022).

4.1.4. Education

Bangka Regency emphasizes that education is important, this is in line with development in the economic sector and increasing human resources. According to the Central Bureau of Statistics (2022) was stated that in 2020 in Bangka Regency there were 181 elementary school units consisting of 166 public elementary schools and 15 private elementary schools. Meanwhile for the junior high school level are 44 units with 32 public units and 12 private units. While for the High School are 17 units with 10 Public SMA units and 7 Private SMA units.

School Participation Rate (APS) in Bangka Regency has decreased from 2019 to 2020. The School Enrollment Rate (APS) is the proportion of the

population of a certain school age group regardless of the level of education undertaken. This school enrollment rate is useful for seeing the number of age residents who have taken advantage of educational facilities. The following is the school enrollment rate in 2022 which can be seen in Table 4.2.

Table 4.2. School Participation Rate in Bangka Regency

Age APS (years)	School Participation Rate (APS)	
	2019	2020
7-12	100,00	99,58
13-15	95,35	95,15
16-18	73,04	64,08

Source: Central Bureau of Statistics Bangka, 2022

4.1.5. Health

Health development is a development that seeks to achieve the ability to live a healthy life for every human being in order to achieve optimal health status. Health development that wants to be implemented to achieve the quality of human resources must start from the womb, namely by paying attention to the health level of prospective mothers and babies, school age, adolescents, adults, productive age, to the elderly. This makes health development for the community an important role as a condition for the formation of community welfare.

According to the Central Bureau of Statistics (2022) in 2020 the most common diseases suffered by the people of Bangka Regency were high blood pressure, ARI, and dyspepsia. This year, it was also recorded that there were 12 puskesmas units spread evenly in every sub-district in Bangka Regency with the highest number of puskesmas located in Sungailiat Subdistrict, namely 3 units, namely in Kenanga, Sungailiat, and Sinarbaru Villages, as well as 35 sub-health centers and 19 mobile health centers.

4.1.6. Religion and Social

Places of worship in Bangka Regency are 178 mosques, 231 prayer rooms, 39 churches, 8 monasteries, and 41 temples. Based on the religion adopted, the majority of the population of Bangka Regency is Muslim, amounting to 322,163 people or 86.10% of the total population in Bangka Regency. Protestant Christians are 9,003 people or 2.41%, Catholic Christians are 3,968 or 1.66%,

Hinduism is 32 people or 0.01%, Confucianism is 9,461 people or 2.53% and other religions as many as 1,625 people or 0.43 percent.

The social level that often occurs is traffic accidents. Traffic accidents in Bangka Regency are relatively high, namely in 2020 there were 85 accident cases with 29 deaths, 36 minor injuries and 32 seriously injured people. In 2020, the number of reported crime rates in Bangka Regency reached 287 reports, with the most dominant cases being theft cases, which were 162 cases.

4.2. General Profile of Sago Palm Processing in Kenanga Village

The processing of sago palm in this study is located in Kenanga Village, Sungailiat District, Bangka Regency, Bangka Belitung Province. This processing is a hereditary business that has been around since the 80s until now.

Figure 4.3. Processing in Kenanga Village, Bangka Regency

This processing started from an industrial owner's family who had abundant thatched land so that there was an intention to process thatch plants into sago palm. At the beginning of the formation of this industry, it was still on a home industry scale or still on a home scale. The production process is still carried out using traditional tools and the labor used is still from within the family. The production process is also erratic, sometimes it is done once a week or even once every two weeks to see the situation and condition of dry sago. The

longer it takes to produce sago palm, the processing of sago palm in Kenanga Village is growing. There has been an increase in production so that the labor used has been taken from outside the family. The tools used in the production process have also begun to change, in several stages of production using machines. The growing sago palm industry in Kenanga Village is actually no longer using labor from within the family but only workers from outside the family. The production process has also been dominated by the help of machines so that the production process is stable, which only takes one week to produce sago that is ready to be sold.

This processing has a production capacity of 5 tons of thatch stem or the equivalent of 1 large truck. Once the process of grating can consume 5 tons of sago palm stems or can be divided into 2.5 tons to be grated first, then the rest will be done the next day. These 5 tons of sago palm stems will be processed for one week, starting from grating until it becomes ready-to-market sago.

The production time for processing sago palm in Kenanga Village is throughout the year as long as raw materials are available. One time production of thatch stems into sago palm takes 7 days. During these 7 days, processing stages were carried out starting from cutting the sago palm stems, grating, settling, refining, drying, milling, and packaging. Within one week, the palm sago is not always grated on the same day, but there is always grating in the one week time span so that a stable amount of sago palm can be produced per week.

Sources of raw materials for the sago palm industry in Kenanga Village come from outside Kenanga Village. The thatch plants owned by the industrial owners have been used up so the raw materials used are to buy from the thatch plant collectors. The raw material for processing sago palm is the stem of the thatch plant. These sago palm collectors act as buyers of thatch from farmers, which are then cut and only the stems are taken. The sago palm trunks will be cut down and sold by trucks.

The price of thatch stems is 3 million in a capacity of 1 truck or 5 tons. Every single car of thatch trunks will be directly processed to be made into sago flour. This direct processing functions so that the starch contained in the thatch stems is not damaged. If the color of the thatch stems has changed to a brownish

color, the thatch is no longer good, this causes the starch contained in it to be damaged and only produces dregs when processed. Thatch stems are not always available every day this is due to the inability of the thatched stems and erratic weather factors. Processing in Kenanga Village is a small industry in the field of agriculture that still utilizes sunlight. When it rains, the procurement process for raw materials must be stopped, this is due to raw materials that are not durable, limited stoe for starch, and the lack of storage containers for sago that are still wet and not ready to be milled, so the production process time is set for one week. The processing of sago palm in Kenanga Village chooses workers from outside the family with a daily wage system with 9 hours of work per day. This workforce will work for 6 days, from Monday to Saturday. The work carried out by employees who work in this processing is not always the same every week, this is based on the situation of sago. If in the first week the shavings are done on Monday, then the second week is not necessarily done on Monday, it could be on Tuesday.

The product of the sago palm industry in Kenanga Village is refined sago which is ready for further processing as a raw material for the food industry. This processing sets the price of sago at Rp 10,000.00 per kg of refined sago. The marketing of this sago palm is outside Kenanga Village, Bangka Regency and even outside the Bangka Belitung. Consumers in the sago palm industry in Kenanga Village have been subscribing for a long time, so the target market for the production of this sago palm has been identified. Most of the sago palm is used as food, namely the food industry, while the sago palm dregs are often sold and used as livestock feed.

Table 4.3. General Profile of Sago Palm Processing in Kenanga Village

Description	Sago Palm Processing
Processing Location	Kenanga Village Bangka Regency
Production Capacity	5 tons Trunk Sago Palm
Production Time	Throughout the Year
Production Time (per production cycle)	7 days
Source of Raw Materials for Sago	From outside Kenanga Village
Tatch stem price	Rp 3,000,000 per truck
Source of Labor	From outside the family
Wage system Labor	Paid per day
Number of working	hours 9 hours
Production of	refined sago
Sago Price	Rp 10,000 per kg
Marketing Area	Outside Kenanga Village
Consumer	Food Industry
Utilization	Animal Feed

4.2.2. Number of Workers in the Sago Palm Industry

The processing of sago palm in Kenanga Village has been producing since the 80s. For business actors in this industry, there is no accurate minimum or maximum determination from the time this processing was formed until now. At the beginning of the production process, the industry in Kenanga Village only utilized labor from within the family and still used traditional tools that were done manually. However, over time, the processing of sago palm in Kenanga Village continues to develop so that to carry out the production process, employees from outside the family are needed because they see an increase in the scale of production in this processing. The presence of employees from outside the family can also simplify and speed up the production process.

The actual number of workers in the processing of sago palm in Kenanga Village in 2022 is 3 people. With each worker helping each other in carrying out every stage of the production process. There are several stages of processing thatch into sago that can be done by one person, but most of the stages must be carried out by two or more people so that it can simplify and speed up the production process.

4.2.3. Identification of Working Time in the Sago Palm Industry

Business actors or employees in the processing of sago palm have the same amount of work, which is 9 hours per day. This processing applies working time from 07.00-17.00 WIB. Active working hours are from 07.00-12.00 WIB and continue from 13.00-17.00 WIB. Working time on the processing of sago palm is from Monday to Saturday while Sundays are given the freedom to take a day off.

Employees in the processing of sago palm in Kenanga Village get different wages, this is because the length of work in processing is not the same. Employee 1 has worked for 6 years in this sago palm processing, employee 2 has worked for 1.5 years and for employee 3 has worked for 8 months. The longer you work, the more wages you receive per day.

4.2.4. Education of Workers in Industrial Business in Kenanga Village

The education taken by business actors and employees in processing sago palm in Kenanga Village varies from graduating from Junior High School to Senior High School. The following is a summary and percentage of education levels in sago palm processing business actors in Kenanga Village.

Table 4.4. Education of Sago Palm Processing Business Actors

Education	Total (Percent)	Percentage (%)
Junior High School	1	33,33
Senior High School	2	66,67
Total	3	100,00

Source: Appendix 2

Based on table 4.4. it can be seen that there are two education levels taken by owners business and employees who work on the processing of sago palm in Kenanga Village, namely Junior High School and Senior High School. Judging from the level of education taken, this processing is not too concerned with what graduate the business actor has. This means that employees who work in this processing may come from ordinary circles without having to go through a long school period.

4.3. Raw Material Procurement System, Production Process, and Marketing System

4.3.1. Materials, Tools, and Investments in the Production Process of Sago Palm

Materials are goods or commodities owned by companies or agroindustry to be modified into semi-finished goods or finished goods through the production process, in this case the processing of sago using sago palm stems as raw material for making sago and water as auxiliary materials for the production process.

Tools are goods that are used to accommodate, place, introductory media, and others as assistants to facilitate the production process. A good tool is a tool that is used in accordance with production needs, in this case the processing of sago palm provides tools that are specifically provided to simplify and speed up the production process.

Investment is an expenditure or investment in the form of goods by a company in order to increase the price of these goods. Investment is also defined as the purchase of several types of assets in the form of land, vehicles, houses or others which, if it sold in the future, will provide a price value or income that is higher than the initial purchase. The assets in the processing of sago palm are land and buildings where sago palm is processed.

4.3.1.1. Sago Palm Production Materials

a. Types of Production Materials for Sago Palm

Processing in Kenanga Village has one main product, namely sago palm. The main material used in the process of making sago palm is thatch stem. The thatch palm stems used are sago palm stems that are ready to be processed or ready to harvest at the age of 10 to 12 years. The thatch stem that are ready to be harvested will produce more sago than the young one.

Gambar 4.4. Sago Palm Raw Material (Thatch Stem)

The auxiliary material in the production of sago palm process is water. The water used is water that comes from springs. This water to facilitate the production process so the processing of sago palm does not require a fee for providing water to assist the production process.

Figure 4.5. Production Process Auxiliary Material (Water)

The materials used for the packaging of sago palm are clear plastic and sacks (size: 50 Kg).

Figure 4.6. Plastic Containers for Packaging

Plastics are used as the first container to store dry sago before being put into sacks, this aims to make it easier to take sago and so it does not spill everywhere. The plastic used by processing is plastic purchased in the market. This plastic can accommodate as much as 50 kg of sago. The plastic used is clear or transparent colored plastic. The processing of ago palm in Kenanga Village, Bangka Regency have not yet a label for the industry so the sacks used are still sacks with other product labels. The sacks used are store-bought sacks such as sugar or other flour sacks.

Figure 4.7. Sago Container Sago for Packaging

a. Procurement of Raw Materials

Procurement of raw materials for the processing of sago palm in Kenanga Village is a complex activity to obtain processing goods, namely thatch stems by looking at the fulfillment of production capacity, quality and quantity of sago palm, fast and safe delivery time, and affordable prices. The processing of sago palm in Kenanga Village fulfills the raw materials by buying it from a second person, namely the sago palm plant collector. Thatch collectors function as buyers of live thatch plants to farmers who own thatch plants. The collectors buy some thatch plants which are then cut down, cut, cleaned, and only the inner stems are taken to be later sold to the thatched sago processing plant in Kenanga Village. This sago palm processing usually buys sago palm trunks with a capacity of 1 large truck or the equivalent of 5 tons of thatch stalks and or if the collector cannot provide 1 large sago palm trunk, the collector usually sells 2.5 tons of sago palm stalks or the equivalent of 1 *pickup truck*. The sago palm needed in the production process of sago palm is always fulfilled every week. Within once a week or twice a week, the sago palm stems will be delivered by the thatch stem middleman, so that the processing of sago palm can always carry out the production process. Seeing that the thatched stems are not durable, usually the owner of this processing who calls or asks to be sent the thatch stem after seeing the situation and conditions in the processing of sago palm.

b. Business Description of Thatch Plant

1. Owner of Thatch Plant

The thatch plant in Bangka Belitung Province is wild plant that has never been cultivated. The owner of the thatched plant sells the thatch plant that is ready to be cut down to the middleman of the thatch plant from his land which is accidentally overgrown with this thatch plant. Initially this thatch plant was used as plant to absorb water in humid areas. The leaves of thatch are also often taken only to be used as the roof of the cottage or the roof of the house. Propagation of thatch on a farmer's land is usually from the shoots or tillers of the thatch, so that if left unchecked, this thatch plant will grow by itself. One parent plant of thatch can produce more than three

thatch shoots. Thatch plants are usually harvested at the age of 10-12 years. From the results of interviews with several farmers, it was stated that this thatch plant provides benefits to the farmers who own the land overgrown with thatch because one stem of thatch is priced at Rp. 100,000.00. The sago palms that grow on farmers' land have never been cared for, these sago palms only grow wild around damp land. Most farmers also do not cut down the sago palm because this plant does not hinder the farming process. The cost incurred by the farmer for the thatch plant is Rp. 0.00 so that the farmer will get a profit of Rp. 100,000.00 for every single thatch plant that grows on their land. However, this also gives a negative value to farmers because of the similarity in prices between one sago palm and another sago palm. There needs to be a distinction between thatch plants so that the owners of thatch plants who have a higher size of thatch also get a higher price.

2. Thatch Middleman

Thatch plants are also used as a business for thatch middleman. The thatch middleman are the second person to benefit from the sale of thatch plants. The middleman will buy the thatch plant directly from the thatch owner who owns the thatch plant at a price of Rp. 100,000 per stem of the thatch plant. The middleman sell 1 truck or 5 tons of thatch stems for IDR 3,000,000.00. Middleman cut down the thatch plants with the help of a tree saw machine. Meanwhile, to transport the sago palm trunks, middleman use trucks. One time delivery of thatch stems to the point of sale can cost 5 stalks of thatch, so to pay for the thatch plant, a fee of IDR 500,000 is required. The fuel used for the tree saw machine is 2 liters of gasoline to cut down approximately 5 thatch plants or the equivalent of 5 tons of thatch stalks with a thatch plant length of approximately 8 meters. The fuel used for the truck is diesel fuel with the process from the beginning going to the logging location to the place to sell sago palm stems of approximately 20 liters of diesel. The middleman of thatch plants usually use 2 people daily wages (lifting services) with 1 person's wages being Rp. 100,000.00.

Table 4.5. Fixed Costs (Expenditures for Rumbia Collectors)

No.	Description	Number of Units	Price (Rp)	Current Price (Rp)	Life of Use (Years)	Depreciation (Rp)
1	Tree Saw Machine	1	2.000.000	700.000	5	260.000
2	Trucks	1	120.000.000	80.000.000	30	1.142.857
	Total					1.402.857

From Table 4.5. the result of the addition of fixed costs is Rp. 1,402,857.00 with each depreciation taken into account. As for Table 4.6. obtained a total variable cost of Rp. 834,000.00. The total cost incurred by rumia plant collectors for 1 time delivery of thatch stems to processing is Rp. 1,402,857.00 plus Rp. 834,000.00, which is Rp. 2,236,857.00.

Table 4.6. Variable Costs (Expenditures for Thatch Planters)

No.	Description	Total	Unit Price (Rp)	Total Price (Rp)
1	Thatch (stem)	5	100.000	500.000
2	Gasoline (liters)	2	7.000	14.000
4	Diesel Fuel (liters)	20	6.000	120.000
5	Labor Wages (person)	2	100.000	200.000
	Total			834.000

The income of thatch collectors is the selling price of thatch stems (receipts) less the total cost. The calculation is as follows.

Revenue = Revenue – Total Cost

= IDR 3,000,000.00 - IDR 2,236,857.00

= IDR 763,143.00

From the above calculation, the income earned by the thatch collectors is IDR 763,143.00.

4.3.1.2. Tools and Investment Sago Palm Production Process

a. Sago Palm Production Equipment

The tools of processing thatch into sago palm consist of daily tools special tools to assist the production process. The tools used can be found in shops or markets and some tools that must be specially ordered because they are not available in the market.

The tools used in the production process are as follows:

1. Diesel Motor Engine (compression trigger engine) is a tool used to assist the production process. This Agorindustri has 3 diesel engines, each of which can last up to 10 years of use with a record of being well cared for. This machine is used as a combustion tool, one of which is used to supply electricity to the pulp separator machine while carrying out the production process and this machine is also used as a driving tool for the pulp separator machine which has been modified by the owner of the thatched sago processing in Kenanga Village. The fuel used to run this engine is diesel.

Figure 4.8. Diesel Engine

2. The pulp separator machine functions as a tool to separate the water from the sago palm starch with the dregs from the grated sago palm stems. This machine moves with the help of electricity supplied by a diesel motor engine so that in this processing it does not require electricity from state power centre

(PLN) anymore. This pulp separator is estimated to last up to 10 years depending on its maintenance and use. This pulp separator machine was specially designed by the processing owner for the production process of sago palm in Kenanga Village. This amoas separator machine has been combined with several tools, namely a milling machine and a diesel engine. This machine has also been connected to a pipe as a container to drain the sago starch extract water into the sago starch reservoir.

Figure 4.9. Dregs Separator Machine

3. Robin Drive Machine is useful for draining water from water sources to water reservoirs (water drums) and is useful for draining water while doing the process of grating sago palm stems and washing sago starch deposits. This machine can be used for about 5 years with intensive maintenance. In this processing there are 2 robin driving machines. The fuel used to start this engine is gasoline.

Figure 4.10. Robin Drive Machine

4. The grater machine functions to crush the sago palm stalks into fine powders so as to facilitate the extraction of sago starch. This machine has been modified by combining two engines, namely a diesel motor engine and a sago palm chopping machine. This machine can be used for approximately 10 years. This machine uses gasoline to run it.

Figure 4.11. Thatch Stem Grate Machine

5. Sago Palm Milling Machine is a machine that functions to smooth the starch of sago palm which is still in the form of chunks. This aims to facilitate the

drying process of sago. This machine is specially designed so that the sago chunks can fit into the machine which is shaped like a mouth. The fuel for this engine is gasoline. This machine can operate for approximately 5 years. The processing of sago palm in Kenanga Village assembles this sago lump milling machine, the sago owner buys two separate tools and modifies them into a sago starch lump grinding machine that is ready to be used.

Figure 4.12. Sago Bulk Milling Machine

6. Dry Sago Milling Machine is a tool used to make dry sago into fine sago ready to be marketed. The fuel used by this engine is gasoline. This machine has a capacity of approximately 20kg. This machine has an economic life ranging from 8-10 years.

Figure 4.13. Dry Sago Milling Machine

7. The Tossa Tricycle Motor is a means of transportation that serves to transport sago from the drying area to the dry sago mill. This three-wheeled motor tossa has been modified so that it has an additional tub to put sago. This tossa motor operates with the help of gasoline. The durability of this tossa motor reaches approximately 25 years if properly cared for.

Figure 4.14. Tossa Tricycle Motorcycle

8. Zinc Housing Sago Cover is a tool used to cover sago when it rains and at night. The zinc housing is placed not far from the drying area, so that when it

rains, the sago can be stored immediately. The estimated length of time this zinc housing can remain in use is 15 years. There are 9 units of zinc in the processing of sago palm. As the name implies "zinc housing", the material used is zinc. This zinc housing was made by the processing owner himself because he saw that there was no special storage area for sago that had not yet dried. This zinc housing is very useful for protecting sago from rain and dirt when the sago is not dried in the sun.

Figure 4.15. Homemade Zinc Cover Sago

9. Sago Container for Drying is a place to put sago when you want to dry it. This sago container is made of zinc whose edges have been added with wood to make it easier to move. There are 222 units of sago containers in the processing of sago palm sago in Kenanga Village. The economic life of this sago container is about 10 years.

Figure 4.16. Sago Container for Drying

10. Scales are tools used to weigh sago that has been put in sacks. This weighing function is to ensure that all sago sacks contain 50kg of refined sago. This weighing is carried out after the dry sago milling process is carried out. This scale has a weight capacity of 500kg. This scale can last up to 10 years.

Figure 4.17. Sago Scales 50Kg

11. Drum is a place for water reservoirs and as a temporary storage place, especially black sago. There are 5 drums in the processing of sago palm in Kenanga Village. In general, these drums can be used for approximately 5 years. The drums used in the processing of sago palm in Kenanga Village are drums that are purchased directly from the market. The selected drum is a good quality drum, this is due to the continuous use of drums. Each drum has

its own function, there is a drum that serves to collect water, there is a drum that functions as a reservoir for black sago, and there is a drum that functions as a reservoir for the remaining sediment water that still contains sago extract.

Figure 4.18. Shelter Drum

12. The basin is a place to accommodate the water resulting from the deposition of sago. The water resulting from this deposition is intentionally stored because it still contains sago so that later it can still be mixed with other sago extraction water. The basin used is a large, round and black basin. This basin was purchased by the processing owner in the market. This basin can last for approximately 2 years of use.

Figure 4.19. Big Black Basin

The basin used is a black basin with the best quality. The selected basin is the best basin because it minimizes the damage. This basin must be resistant to water and sunlight, because its use is related to water and can be dried in the open.

13. Paralon pipe is a tool used as a connector to deliver water to every production process. Pipes are often used during the sago starch washing process. The pipe is also used to drain the grated sago palm stems which have been added with water to the pulp separator machine. There are 5 pipes used in the processing of this sago palm. Each pipe has been placed in its place making it easier when you want to use it. The pipe used is a pipe that has been modified or connected with a hose or other tool to facilitate the use of the function of each tool. The pipe used is a white pipe. The economic life of this pipe is about 10 years.

Figure 4.20. Pipe

14. Connecting Hose is a tool used to connect the pipe to the water pump machine (robin driving machine). The hose is used to drain water while washing sago starch deposits or to combine sago starch extracts into one or two places. The service life of the hose is approximately 10 years. There are 4 hoses in the processing of this sago palm.

Figure 4.21. Connecting Hose between Pipe and Robin Drive Machine

15. Threaded Hose is a tool used to connect the water taken and the water released by the robin driving machine (water pump machine). The threaded hose that is commonly used in the processing of this sago palm is a blue hose. This threaded hose is specifically used to simplify the production process. This threaded hose can also be carried easily because of its elastic nature. There are 2 threaded hoses in this processing. The service life of this threaded hose is about 10 years. Threaded hoses can be found in the market or building stores. The threaded hose used is a threaded hose that has been cut into pieces according to the conditions and situations during the production process. The threaded hose used is usually approximately one meter in size, this aims to shorten the distance of water flowing into the robin driving machine and water reservoir.

Figure 4.22. Thread Hose

16. The rubber broom serves as a medium for removing water from the sago deposition area. Usually white sago will settle while above will be waterlogged, this rubber broom will sweep the water so that the residual water can be collected and thrown out of the sediment reservoir. The rubber broom used is a special broom that is only used to remove water from the last sago starch reservoir. There are 3 rubber brooms used in the sago palm agroindustry. Each rubber broom is expected to last for 2 years. Processing using this rubber broom is due to the soft nature of the rubber broom so that it does not interfere with the sago deposits that fall under the sediment water.

Figure 4.23. Rubber Broom Used in Processing

17. The bucket is a tool to hold water and a container to take sago. The bucket used is a used paint bucket. The buckets used in the processing of this sago palm are 5 pieces. Each bucket is placed in a different place according to the needs of the production process. The service life of the bucket is 2 years. This bucket will last a long time if after use it is placed and cared for properly. Processing employees are very concerned about the tools used in processing so that these tools are placed and stored properly when after using them.

Figure 4.24. Bucket Used in Processing

18. A shovel is a tool used to lift chunks of sago starch. This shovel is also useful as a tool for picking up sago and putting it in a bucket. The economic life of the shovel is 5 years. The shovels used in the processing of this sago palm are 2 pieces.

Figure 4.25. Shovel Used in Processing

19. Pushcart is a tool used to transport sago from one place to another. Wheelbarrows are often used to carry lumps of sago starch to the lump mill machine. The existence of this wheelbarrow certainly facilitates and speeds up the process of transporting sago. This wheelbarrow can be used for approximately 5 years. The number of wheelbarrows in this sago palm agroindustry is 2 units.

Figure 4.26. Push Carts Used in Processing

20. Tarpaulin is a tool used to dry sago under the roof of the house where it is processed. This tarpaulin is opened wide and stretched along the entire length of the processing housing. The tarpaulin used is a tarpaulin that has been modified by the owner of the processing, namely the tarpaulins purchased are 2 pieces but are cut and spliced so that they form a long rectangle. The durability of the tarpaulin depends on its use, because the processing only uses a tarp under the hut and is not exposed to direct sunlight and rain, the estimated length of use of the tarpaulin is 3 years.

Figure 4.27. Tarpaulin as a Drying Container

b. Investment in the Production of Sago Palm

Investment in the processing of sago palm is a profitable investment in the future. Investments in the processing of sago palm in Kenanga Village include land and buildings where the production process is carried out. The land where the processing is established is self-owned land so it does not require capital to acquire the land. The land where the processing area is 500 meters with the land used for the production process is about 100 meters.

There are 4 buildings (buildings) used by the processing owner. Each building has its own function. The first building is made of a tin roof, wooden poles, and a permanent tub with a size of 5x4 meters which is useful for grating the sago palm stems and mixing sago palm powder with water. The second building measuring 15x10 meters is shaped like the letter L with an asbestos roof

and a permanent foundation. This second building is made of 13 sago starch storage tanks with a size of 1x2 meters. The third building is a building that functions as a place for lumps of sago starch, a place for grinding sago chunks and a place for drying sago with tarpaulins. The size of this third building is 20x5 meters. This third building uses an asbestos roof, wooden poles, and plinths. The fourth building is a permanent building measuring 4x5 meters which is useful for a dry sago mill as well as a sago storage area (sago warehouse) before sago is sold to consumers. The outskirts of agroindustry are surrounded by a zinc fence with a height of 2 meters, so to enter this processing, use a door made of zinc as well.

Figure 4.28. View of the Building on the Processing of Sago Palm

4.3.2. Sago Palm Production

Process The processing process in Kenanga Village can go through seven stages, namely cutting the sago palm stalks, grating, settling, refining, drying, milling, and packaging. These stages have their respective functions and objectives so that each stage should not be missed. The seven stages of the sago palm production process are as follows.

a. Tatch Stem Cutting

Cutting the tatch stem serves to make the size of the sago palms smaller in order to facilitate the grating process. This sago palm cutting uses a small axe that has been specially provided to cut the thatch stems. The texture of thatch stems is not too hard so the cutting process does not require a very long time.

Figure 4.29. Palm Stem Cutting

The stems of sago palm that contain a lot of sago starch are sago palm stems that are completely ripe or old, the stems are pale white in color, the stem circle is large, the stem texture is slightly harder than the young stems. While the stems of young sago palms are usually slightly red in color, the texture of the stems is not hard and very easy to cut.

b. Grating with a Grating Machine

Grating is the second process in processing Palm into sago palm. The thatch stalks that have been cut to the size of the grater can be directly inserted into the grating machine. The grating machine works with the help of human power. The result of grated sago palm is fine powder. The sago palm powder will be collected into a tub filled with water. The powder of thatch stalks that has been mixed with water and stirred until evenly mixed will then be transferred to the pulp separator machine. This dregs separator machine functions as a separator between the dregs and the starch extract of sago Palm. The pulp separator machine will also drain the sago starch water which will be deposited into a settling basin.

Figure 4.30. Grate Tatch Stem with Grate Machine

The sago starch extract will be flowed into the reservoir while the dregs will be disposed of in the dregs reservoir. The sago palm is not grated every day, it depends on *stock* of the sago palm to be grated. However, once a week the grating will be carried out according to the length of the production process, which is 7 days.

Figure 4.31. Sago Starch Extract Flowing to the Storage Tank

c. Settling

Processing in Kenanga Village applies three times the deposition of sago palm starch. Each deposition has a different function and purpose, but the principle is to produce good quality sago. In the first deposition, the starch extract which is still mixed with water will be deposited for five hours in a holding tank.

Figure 4.32. First Precipitation on Sago Palm

This precipitation serves to separate the extract of thatch starch with the water. This process will make the sago starch settle to the bottom while the water will be on top. After five hours of settling, the water in the reservoir must be removed and only the starch extract of the sago palm is left. The starch extract in each of the nine containers will be combined into only two reservoirs. After the first deposition of starch extract incorporation was completed, then washing was carried out to separate black sago and white sago. After only the white sago was collected, the second deposition process continued. The second deposition lasted for three days. It still aims to separate the sago starch with water.

Figure 4.33. Second Precipitation in Sago Palm

After three days, the water from the sediment will be drained manually using a hose. After the starch is separated from the water, the starch is washed again. This washing serves to make the sago completely clean from dirt and remnants of black sago that are still attached to white sago. After the starch is washed, the final deposition is carried out.

Figure 4.34. The Last Deposit of Sago Palm

The final deposition was carried out for approximately four hours. This process is carried out to precipitate the starch and remove the remaining water. The starch resulting from this third stage must be completely solid and not contain

much water. This aims to facilitate the removal of starch and accelerate the drying time of sago. After the starch is hard, the starch must be removed to the starch shelter before the lump milling process.

Figure 4.35. Removal of Starch in the Shape of Chunks

d. Milling in the Sago Starch Bulk Milling Machine Milling

sago starch chunks aims to crush the starch chunks in order to facilitate the drying of the starch. In this process, the starch can be said to be sago, this is because the chunks of thatch starch have entered the refining stage and have an almost smooth shape (small grains). The sago produced at this stage is wet sago. The wet sago is then placed on a container made of zinc which has been modified by the processing owner to facilitate the drying process of sago. When the starch has been removed and mashed, the sago palm starch will be more durable, the time limit for smoothing the sago chunks is two weeks. If the milling exceeds the time limit of two weeks then the starch lumps will be damaged or overgrown by fungus.

Figure 4.36. Milling in Sago Starch Bulk Milling Machine

e. Drying

Drying is done to evaporate the remaining water that is still contained in wet sago so that it becomes dry sago which is ready to be finely ground.

Figure 4.37. Wet Sago Drying

Drying is done manually using sunlight. This process lasts for three days if the weather is always sunny. In the afternoon, when the sun is about to set, the wet sago that has not yet dried will be stored in a zinc housing which is intentionally made to store sago so that it does not get wet when it rains and is not exposed to other impurities.

Figure 4.38. Zinc Household Used to Cover Sago

f. Milling in the Dry Sago Mill Machine

Sago that has been dried will enter the milling stage. This mill aims to smooth the sago to the maximum so that the shape is very smooth and soft. Sago that has been refined has a milky white color with a crunchy and rough texture. This milling process takes place after the sago is completely dry when it is dried in the sun. The milling of thatched sago in Kenanga Village uses a medium-sized grinding machine that can accommodate sago palm with a weight of approximately 20 kg. The process of entering sago into the grinding machine is also still manual, namely workers at the processing will take the sago using a bucket and then put it into the grinding machine. The results of the milled sago will be accommodated first into a tub made of boards before the sago is weighed and packaged.

Figure 4.39. Dry Sago Milling Process

g. Packaging Using 50Kg Sacks

The packaging carried out by the processing in Kenanga Village is not done every day. Sago packaging serves to facilitate buying and selling transactions between the owners of sago palm processing and consumers. Processing in Kenanga Village packs sago using sacks weighing 50 kg.

Figure 4.40. The Process of Packaging Sago into Plastic

After the sago is ground and collected in a board tub, the sago will be weighed and put into a plastic bag that is outside covered with a sago weight of 50 kg

per sack. The scales used are sitting scales which have a weight capacity of 500 kg. After being weighed, the sago sacks will be sewn manually using a rapia rope, this is intended so that the sago does not spill and is easy to carry during the buying and selling process. After all the sago is put into the sack, the sago will be neatly stacked in the storage and milling warehouse. This sago storage lasts as long as there is no order or purchase of sago from the processing owner in Kenanga Village.

Figure 4.41. Sago Weighing Weight 50 Kg

This small processing in Kenanga Village, Bangka Regency does not yet have a label for its industry, so the sacks used are still sacks with other product labels. The sacks used are store-bought sacks such as sugar or other flour sacks. However, this does not reduce the interest of buyers to buy sago palm in this small industry. The sacks used are not a factor in the process of buying and selling sago palm.

4.3.3. Sago Marketing System

The processing of sago in Kenanga Village is a small industry in agriculture that has been operating for a long time so that the marketing system in this processing is stable or fixed. The marketing system implemented by the owner of the sago processing in Kenanga Village is a profit-oriented marketing system.

However, the processing of sago palm in Kenanga Village is very concerned about the quantity and quality of sago produced from the production process. A good production process will produce good sago. Sago has various kinds of derivative products, including being used as ingredients for making pempek, making noodles, and making crackers. Sago also has by-products such as pearl sago. Pearl sago is produced from sago that has low quality, namely sago which cannot be used as fine sago again due to several factors, including the color is not perfect white (yellowish) and because there is already fungus on the lumps of sago starch before drying.

The sago produced in processing in Kenanga Village has two sales targets, namely to cracker making agents in Belinyu District, Bangka Regency and outside Bangka Belitung Province, which is sent to a cracker processing site in Palembang. However, this processing does not prevent consumers who come directly to agroindustry to buy sago in retail, such as 1 or 2 kilograms. The processing of this sago palm has been trusted by consumers to produce good quality sago so that consumers do not hesitate to continue to subscribe.

The processing of sago in Kenanga Village also applies advance orders before the sago is available or another term is *pre order* (PO). The owner of sago in Kenanga Village will record how much sago is needed by consumers so that the processing owner will target production results every month.

There are two ways to deliver sago in Kenanga Village, namely to deliver directly to consumers' places and/or wait for consumers to come directly to the processing site for the production of sago. Shipping costs are not borne by the processing but there are additional costs for the process of sending sago to the consumer's place. The delivery of sago is not valid for small quantities, the minimum number of purchases of sago is 10 sacks or the equivalent of 500 kg of sago.

4.4. Cost of Goods Sell Sago in Kenanga Village

4.4.1. Production Costs

Production costs are costs incurred in the process of processing thatch into sago, namely the cost of goods sell of raw materials, direct labor costs, Variable Factory Overhead Cost, Fixed Factory Overhead Cost.

1. Raw Material Costs

Raw material costs are costs incurred for basic materials or main materials used in the production process. The raw material used in this production process is sago palm. The sago palm needed in one production is 5 tons. The cost of 1 car of thatch trunks is Rp. 3,000,000.00 with 5 tons of thatch filled. This means that for 1 kg of thatch, the price is Rp. 600.00. In a month there are 4 times of production, then 1 x 4 is 4 times, meaning that there are 4 times the supply of raw materials in a month. Then the cost needed for raw materials in a month is Rp. 3,000,000.00 multiplied by 4, which is Rp. 12,000,000.00 per month. With the average cost of raw materials issued is Rp 12,000,000.00 per month. The calculation of costs can be seen from Table 4.7.

Table 4.7. Cost of Raw Materials in Processing Sago Palm

Name of Material	Price (Rp/truck/week)	Time/month	Total Price (Rp/month)
Thatch Trunk	3,000,000	4	12,000,000
Total Cost			12,000,000

Source: Data processed

2. Direct Labor Costs

Direct labor costs are costs incurred to pay employees who work in processing either in daily, weekly, or monthly wages. There are three employees who work on processing in Kenanga Village, with employee wages depending on the length of work. For 1 employee the wages issued are Rp. 200,000.00 per day, for 2 employees the wages are Rp. 150,000.00 per day, and for 3 employees the wages are Rp. 100,000.00 per day. This processing provides daily wages so that the wages given are fixed or the same every day. The cost calculation can be seen from Table 4.8.

Table 4.8. Direct Labor Costs in Sago Processing

Workers	**Wage (Rp/day)**	**Total Wages (Rp/month)**
Employees 1	200,000.00	4,800.000,00
Employees 2	150,000.00	3,600,000.00
Employees 3	100,000.00	2,400,000 ,00
Total Cost		10,800,000.00

Source: Appendix 4

In Table 4.8. it can be seen that the costs incurred for direct labor wages are Rp. 10,800,000.00 per month. Employee 1 gets a higher wage than employee 2 and employee 3 because employee 1 has worked in the processing of sago palm in Kenanga Village for 6 years. Meanwhile, employees 2 and 3 are relatively new to work, so the wages earned are still small. More complete calculations can be seen in Appendix 4.

3. Variable Factory Overhead Cost

Processing in Kenanga Village uses several other materials to assist the processing of sago palm, including fuel in the form of diesel and gasoline as well as sacks and plastic for packaging sago. This processing can consume 20 liters of diesel fuel per week, 15 liters of gasoline per week, and 30 sacks and 30 plastics per week. Each material requires 80 liters of fuel per month, 60 liters of gasoline per month, 60 packaging plastics per month, and 120 packaging sacks per month. The price of diesel fuel per liter is Rp. 6,000.00, the price of gasoline per liter is Rp. 7,000.00, the price of plastic packaging is Rp. 2,500. From the price, quantity, and production time per week and per month can be calculated and produce the calculation in Table 4.9.

Table 4.9. Variable Factory Overhead Cost

Components Variable Cost	**Total Cost (Rp/month)**	**Percentage (%)**
Diesel Fuel (liters)	480.000,00	20.00
Fuel Gasoline (liters)	420,000.00	17.50
Plastic (fruit)	300,000.00	12.50
Sack (fruit)	1200.000,00	50.00
Total Cost	2,400,000.00	100,00

Source: Appendix 5

Based on Table 4.9. it can be seen that the total costs incurred for variable factory overhead 2,400,000.00 per month. The highest percentage is the cost of sacks, which reaches 50.00% of the total costs. Meanwhile, the smallest percentage spent in this processing is plastic, which is 12.50% of the total variable costs. The percentage of diesel fuel costs is 20.00% while the percentage of gasoline costs is 17.50%. Complete calculations can be seen in Appendix 5.

4. Fixed Factory Overhead Cost

Overhead costs for processing in Kenanga Village can be calculated according to the depreciation value of the goods or tools used during the production process. Each tool used has a different acquisition value and economic life so that it will provide a different depreciation value. Depreciation value can be calculated in various ways, one of which is the straight-line method. In this method, the data required are cost, salvage value, and economic life. Depreciation using the straight-line method is the cost less the salvage value and divided by its economic life. The calculation of costs can be seen from Table 4.10.

Table 4.10. Overhead Costs for Processing Sago

Name of Goods	Units	Depreciation (Rp/Month)
Building	1	233,333.33
Diesel Motor Engine A	1	6,666.67
Diesel Motor Engine B	1	23333.33
Grating Machine	1	45,833.33
Dregs Separator	1	416,666 ,67
Engine Driven Robin A	1	11,666.67
Engine Driven Robin B	1	11,666.67
Milling Machine Sago	1	18,333.33
Dry Sago	1	53,333.33
Three-Wheel Motor Tossa	1	133,333.33
Basin	2	13,333.33
Zinc Housing	9	15,000.00
Pipe	5	15,625.00
Hose	4	16,666.67
Threaded Hose	2	4,583.33
Rubber Broom	3	5,000.00
Sago Container	222	647,500.00
Bucket	5	8,333.33
Scales	1	36,666.67
Drum	5	47,916.67
Shovel	2	1,500.00
Wheelbarrow	2	90,000.00
Tarpaulin	2	7,500.00
Total Cost		1,782,791.67

Source: Appendix 5

Based on the data in table 4.10. it can be seen that there are several relatively high depreciation values up to hundreds of which are the building depreciation costs and the depreciation costs for the pulp separator machine. In this processing, there are also several tools whose average depreciation value reaches hundreds of thousands, including the cost of grating machines, depreciation costs for robin A and B driving machines, depreciation costs for sago chunk milling machines and dry sago milling machines, depreciation costs for three-wheeled tossa motorcycles. and depreciation expense. Meanwhile, the depreciation cost for other tools is still relatively low, which is below Rp. 100,000.00. The total fixed factory overhead costs incurred by the processing of sago palm in Kenanga Village are Rp. 1,782,791.67 per month with a total of 23 cost components.

4.4.2. Production, Selling Price, and Revenue

4.4.2.1. Production and Selling Price

Processing of sago in Kenanga Village takes 7 days in one production process. This is due to the lack of tools used in processing sago palm trunks into sago so that in some stages of the production process still using the traditional method so it takes more than one day. In one car truck transporting thatch there are 5 tons or 5,000 kg of thatch stalks. Processing in Kenanga Village is able to accommodate 5 tons of thatch stalks in one day and can be directly shredded so that it becomes sago palm starch. Each one time production can produce 2.4 tons or 2,400 kg of refined sago palm that is ready to be traded. In one month there are 4 production processes, meaning that in one month it can produce 9.6 tons or 9,600 kg of sago.

The selling price for processing thatched sago in Kenanga village is relatively standard, which is Rp. 10,000.00 per kg of sago. The processing of thatched sago in Kenanga Village does not sell sago in retail form per 1 kilogram but is sold in a quantity of 50 kg per sack, which if allocated in one sack of thatched sago can be sold at a price of Rp. 500,000.00 per sack.

4.4.2.2. Revenue

Revenue from the processing of sago can be obtained from the total amount of sago production obtained and then multiplied by the selling price prevailing in the processing of sago in Kenanga Village. In the processing of this sago, the price is set at Rp. 10,000.00 per kg of sago. This processing can produce 9,600 kg of sago per month, meaning that this processing gets an income of Rp. 96,000,000 per month.

4.4.3. Cost of Goods Sell

Cost of Goods Sell is the price resulting from the sum of all components of production costs including raw material costs, direct labor costs, variable factory overhead cost and fixed factory overhead cost. All components that have been added will be divided by the production results per production cycle that has been determined either in a period of per day, per week, or per month. The cost calculation can be seen from Table 4.11

Table 4.11. Cost of Goods Sell in the Processing of Sago

A	**Production**	**Production (Kg/month)**	
Total Production of Sago		9,600	
B	**Production Cost**	**Rp/production cycle (months)**	**Percentage (%)**
	1. Raw Material Cost	12,000,000	44,47
	2. Labor Cost	10,800,000	40.03
	3. Variable Factory Overhead Cost	2,400,000	8.89
	4. Fixed Factory Overhead Cost	1,782,792	6.61
	Total Cost	26,982,792	100.00
C	**Cost of Goods Sells**	**(Rp/Kg)**	
	(B/A)	2.811	
D	**Selling Price of Sago**	**(Rp/Kg)**	
	1 Kg Sago	10,000	
E	**Processing Revenue**	**(Rp/Month)**	
	(AxD)	96,000,000	

Source: Data processed, 2022

The calculation of the cost of goods sell is carried out in a period of per month. The processing in Kenanga Village has an almost stable supply of sago palm with the yield of refined sago obtained is 2400 kg per week and if allocated

within 1 month, the supply of sago is 9,600 kg per month. It can be seen from Table 4.11. that the total cost of raw materials is Rp. 12,000,000.00 per month, the total cost of direct labor is Rp. 10,800,000.00 per month, the total variable factory overhead cost is Rp. 2,400,000.00 per month and the total fixed factory overhead cost is Rp. 1,782,792 per month, so that the cost of production is Rp. 2,811.00/kg sago. The total cost of sago production with the full costing consists of several cost elements, namely the cost of raw materials, direct labor costs, variable overhead fixed. From Table 4.11. it can be seen that the largest cost incurred by processing in Kenanga Village is the cost of raw materials, which reaches 44.47%. The least costs incurred by this agro-industrial sector are fixed overhead costs of 6.61%, percentage of labor costs of 40.03%, and overhead with a percentage of all total production costs of 8.89% of total production costs. issued for a period of one month.

4.5. Added value of Sago in Kenanga Village

Added value analysis in sago processing is a series of activities to see the addition of price value to treated sago palm stems. Added value analysis can be done by using the hayami method. The hayami method is a way to interpret from an economic point of view the added value content of processing thatch stalks into sago. The hayami method is applied to see the percentage of profit received by processing.

The added value analysis in the processing of sago in Kenanga Village includes activities in purchasing raw materials, namely sago palm trunks to become marketable sago. The components of production costs needed in the processing of sago consist of the cost of the main material (raw), the cost of auxiliary raw materials (by-products), the cost of depreciation of the equipment used, and the cost of employee wages. The raw material for this processing is in the form of thatch rods, while the auxiliary materials consist of gasoline, diesel fuel, sacks and plastic.

Based on the diagram in Figure 4.42 below, by including all components of the costs incurred for each processing of thatch into sago, it can be seen that the highest percentage is expenditure for raw material costs, reaching 44% of the total

costs used in one production process. This is because sago is pure from sago palm starch, so that more raw materials are needed, namely sago palm stems.

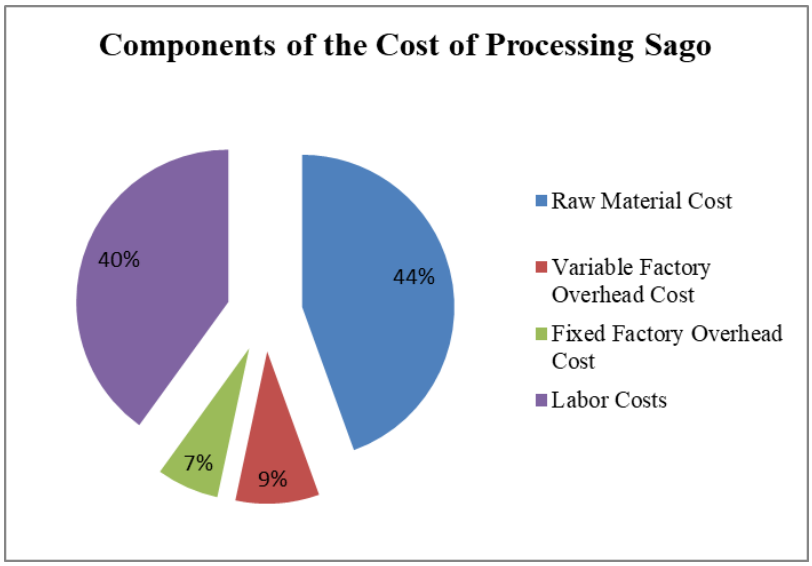


Figure 4.42. Components of the Cost of Processing Sago

The smallest cost percentage of processing sago is fixed factory overhead cost which is 8% of the total cost components needed in the production process. This is because at each production time, the contribution of other materials required is very small, so that the percentage value of the cost of using materials is also low according to the portion of all components of the costs incurred. The percentage of expenses for overhead is 7% while the percentage of expenses for direct labor costs is 40%. Labor wages have a fairly high percentage because the wages given to processing employees are relatively high.

Processing in Kenanga Village produces 2,400 kg of refined sago at one time of production. If calculated for one month, it will produce 9,600 kg of sago per month. The selling price given to consumers is Rp. 10,000.00 per kg of sago. The processing of sago consumes 5 tons of sago palm stalks at one time of production and if it is calculated for a month it is 5 tons multiplied by 4, which is 20 tons of sago palm stalks or equivalent to 20,000 kg of sago palm stalks per month with the purchase price of sago palm stems, which is Rp. 3,000,000.00 divided 5000kg is Rp. 600.00 per kg of thatch stalks.

The data presented in Table 4.43 below is the calculation of the added value analysis using the Hayami Method. The following is a description of the calculation.

Table 4.12. Added Value Analysis of Sago Palm

Added Value Analysis			
No	**Variable**	**Unit**	**Value**
I	Output, Input, Price		
1	Output	Kg/Month	9,600.00
2	Input	Kg/Month	20.000,00
3	Labor	JOK/month	216.00
4	Conversion Factor		0.48
5	Labor Coefficient		0.011
6	Output Price	Rp/Kg	10,000.00
7	Labor Wage	Rp/Kg	540.00
II	Revenue and Profit		
8	Raw Material Price	Rp/Kg	600.00
9	Contribution of Other Inputs	Rp/Kg	209.14
10	Output Value	(Rp/Kg)	4,800,000
11	a. Value Added	(Rp/Kg)	3,990.86
	b. Value Added Ratio	%	83.14
12	a. Labor Income	Rp/Kg	5.83
	b. Labor Share	%	0.15
13	a. Profit	Rp/Kg	3,985.03
	b. Profit Rate		99.85
III	Remuneration for Production Factors		
14	Margin	Rp/Kg	4,200.00
	a. Labor Income	%	0.14
	b. Contribution of Other Input	%	4.98
	c. Company Profit	%	94.88

Source: Appendix 6

Conversion factors in Table 4.43. obtained from the quotient between variables 1 and 2, namely the division between kg output and kg input which

produces a conversion factor of 0.48. This means that every one kilogram of thatch stalks that are processed will produce 0.48 kilograms of sago.

The business actors in processing this sago are from outside the family, meaning that all production process activities are carried out by employees who are given daily wages. The wages of employees in this processing are not the same because it has been a long time or the employee has just worked. The total labor cost incurred in one month is Rp. 10,800,000 per month with a total of 20,000 kg of thatch stalks being processed per month. This means that the average wage for one kilohram of thatch stems is Rp. 540.00. Workers in this processing work for 9 hours per day and in one month the processing staff in Kenanga Village work for 24 days, so the working hours of people (JOK) per month are 216.00.

The labor coefficient serves to obtain the value of the outpouring of labor used in processing sago palm trunks into sago. The value of the labor coefficient for processing sago in Kenanga Village is 0.01. This means that it takes 0.6 minutes to process one kilogram of thatch stalks into sago.

Auxiliary raw materials (inputs) are the total addition of variable fixed factory overhead cost and variable fixed factory overhead cost in processing one kilogram of thatch stalks into sago, which is Rp. 209.14. This means that to process sago palm stems per one kilogram is Rp. 209.14. The contribution of other inputs or auxiliary raw materials consists of input variable. This value or cost is obtained from the division of each input contribution by the amount input for sago for one month.

The output for processing sago in Kenanga Village is Rp. 4,800.00. The output will provide an added value of IDR 3,990.86 per one kilogram of thatch stalks with a value added ratio of 83.14%. With the criteria according to Hubeis (1997) in Arrizki (2018) which states that if the added value ratio is >40% then the added value ratio is high, so it can be concluded that the processing of sago in Kenanga Village has a high value-added ratio reaching 83, 14%. This value can be interpreted that equal to 83.14%. The output received is added value from the processing of thatch stalks into sago. The nature of the added value in this calculation is the gross added value because it does not include labor income.

Labor income is the product of the coefficient of labor and the average wage of employees per one kilogram of thatch stalks is Rp. 5.83 and the share of labor is 0.15%. This can be interpreted that 0.15 percent of the added value is the income received by employees or workers in the processing of sago palm in Kenanga Village.

The profit obtained from processing thatch trunks into sago palm in this processing is Rp3,985.03/kg with a very high profit rate of 99.84%. This means that 99.85 percent of the added value obtained is profit. The gain in this calculation can already be expressed as a net profit because it has taken into account income from labor.

The margin obtained from the processing of this sago palm is Rp. 4,200.00. This margin is calculated by subtracting the value of output from the price of raw materials. The value of the margin obtained is allocated to labor income, contribution of other inputs, and processing profits. From table 4.43. it can be seen that the largest percentage in the component of the margin value is the company's profit which reaches 94.88%. The application of technology in the processing of sago palm makes this processing a small industry in the agricultural sector which is categorized as capital-intensive processing.

4.5. Description of Ownership and Sustainability of Thatch Plant

Thatch plants is a plant that lives naturally without human intervention (wild plants). In this study, information was obtained that sago palm is a source of raw material for sago processing which is not easy to find since the development of life is so rapid. In Bangka Belitung, especially in the Kenanga area, many people work as tin miners but earn their income from the sale of thatch plants. The existing plants are plants that grow independently without receiving care from the owner of the land overgrown with this sago palm. The thatch plant has many benefits, namely the leaves can be used as the roof of the house or the roof of the cottage and the stems can be processed into sago palm. This sago palm certainly has other derivative products which if processed will benefit (opening business opportunities). Thatch is a source of raw materials that must be preserved, this aims to sustain a processing of thatch plants and maintain community jobs.

Thatch is a wild plant that is reluctant to be cultivated by the community or farmers due to the lack of knowledge about the economic value of the thatch plant. Ordinary people consider that sago palm is only a material for roofing and retaining water on land that is difficult to dry. Thatch is considered unprofitable because there is no thatch cultivation that can be used as an example. In order to maintain the availability of thatch in the long term for the fulfillment of raw materials for processing sago, efforts must be made to control the thatch plant.

Efforts to sustain the thatch plant are an integrated action to overcome and empower the survival of the thatch plant so that the input production of a processing of thatch can be maintained. This effort needs to be implemented because the demand for raw materials for tatch plants continues to increase, while stock of thatch plants in the land of the people of Bangka Belitung, especially in the Bangka area, is very minimal. These counter measures are expected to be a form of supply chain for the agency for processing thatch plants into sago palm or other products.

CHAPTER 5
CONCLUSIONS AND SUGGESTIONS

5.1. Conclusion

Based on the results of the research that has been done, there are several conclusions that can be drawn as follows:

1. Raw materials are obtained from thatch middleman, these middleman act as buyers of thatch plants from farmers. The process of processing thatched stems into sago palm through several stages of the production process, including cutting the stems of thatch, grating, depositing, refining, drying, milling, and packaging. The total time in processing sago palm stalks into fine sago that is ready to be sold is seven days. The marketing system for sago palm has 2 target consumers, including agents for making crackers in Belinyu District, Bangka Regency and out of Bangka Belitung Province, namely Palembang. Orders can be made by pre-order or directly. While delivery is done in 2 ways, namely direct delivery and waiting for consumers to come to processing.
2. The cost of goods sell of sago palm in the processing in Kenanga Village is Rp. 3,379.00 per one kilogram. Processing can process as much as 20,000 kg of thatch plant stems per month with a yield of 9,600 kg of sago palm. Per month this processing sets a selling price of Rp. 10,000 so that this processing receives an income of Rp. 96,000,000.00.
3. The added value analysis in this processing resulted in a ratio level reaching 83.14%, meaning that the added value ratio produced was high. The added value of sago palm is Rp. 3,990.86 per one kilogram of sago palm. The percentage of profit rate is 99.85% with the company's profit margin is 94.88%.

5.2. Suggestions

The suggestions in the research that have been carried out are:

1. To encourage the sustainability of the availability of thatch plant in Kenanga Village, it is necessary to introduce to the community (1) the technical cultivation of thatch plant, (2) counseling, socialization to relevant agencies

regarding the opportunities for sago palm agroindustry, (3) the application of drying and deposition technology.

2. Based on the results of the study, namely the processing of sago palm in Kenanga Village has a very high profit, so it is better if this processing is carried out until an indefinite time.
3. For further researchers, it is hoped that they can examine the marketing strategy of sago on the processing of sago palm in Kenanga Village. For students or further researchers, it is hoped that they can see the supply chain in the processing of sago palm in detail, can find out how to empower sources of raw materials so that sago processing can survive in an indefinite period of time.
4. Based on the results of the study, it is necessary to form a policy for cultivating thatch, this is because it sees the opportunities for the results of processed thatch plants that guarantee welfare. The policy must also include relevant prices to farmers for the units of plants sold which depend on the age and height of the thatch so that farmers can get more profit. Thatch plants must be maintained so that the source of processing raw materials can be maintained. It is hoped that further researchers will be able to analyze the opportunities in terms of costs and derivative products produced from processing thatch into sago, and be able to analyze the level of profit.
5. Future researchers are expected to be able to see the added value from the environmental aspect. The next researcher can see the utilization of sago palm dregs, water resulting from processed sago residue, and sago palm bark so that it has positive values for both external and internal benefits.

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