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Production Planning of Cassava Chips in Small Home Business

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Abstract

The production process of cassava chips begins with the preparation of cassava raw materials and then the process of separating the skin from cassava. The process of cutting cassava into a certain size uses a special machine that is operated manually. The process of frying cassava using a large pan and the process of packaging into plastic are the last step of production. Planning the production of cassava chips starts with preparing the needs of raw materials for production for 3 days in a week ordered from 3 different suppliers to prepare production needs, the quantity needed in purchasing from suppliers includes 120 kg of cassava, 9 kg of red chili, 1 kg of garlic, 3 kg of lime, 27 kg of cooking oil, 9 kg of sugar and 0.25 kg of salt. The initial supply of cassava raw materials provided is 120 kg and at the end of the week the production inventory needs are 80 kg left from the use of 40 kg at the end of the week for the next production.

Keywords: cassava; chips; production; planning.

1. Introduction

The cassava chips business is a small business engaged in the production of snacks known as cassava chips, made from cassava, which production process provides added value. Cassava chips business is a micro business engaged in the production of snacks, when misunderstanding happens between what offered by the business house and customer requirement, the business will eventually lose its competitiveness in the market. In addition, other factors such as dynamic changes in market conditions and significant fluctuations in the resources used in the production process can also cause operational instability [1], [2].

Production is a process of converting inputs into outputs, including all activities that produce goods and services, as well as other activities that support those efforts [3]. Production can be carried out supported by the availability of raw material supplies when production is carried out. Therefore, to meet the needs of companies and consumers, every company must be prepared with the inventory. Production activities pay attention number of needs that must be provided in order to minimize the costs incurred for maintaining the inventory [4]. Inventory needs planning is planned tactically and strategically [5].

Inventory control is used by companies in order to maintain the continuity of the production process in the company and the inventory of products that can provide more profits for the company [6]. Unqualified handling inventory planning in a company can result in spending more costs. On the other hand, if the inventory is too small, it can also be detrimental because the supply of raw materials to make products is insufficient, which results in production process run improperly so that the company cannot meet the needs of orders from consumers. The fewer orders with covering production needs are considered better because it will minimize maintenance costs [7].

The focus on this study is how the cassava chips production process and how to plan production of cassava chips from businesses that produce cassava chips. The goal of this research is to identify the cassava chip production process and analyze the production planning of cassava chips in business houses.

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2. Experimental Methods

The methodology used in this research is doing direct observations with the research location is business house that produces cassava chips in Bantar Gebang District, Bekasi City, West Java 17153. The observations carried out include:

1. Observation of the home business production process when producing cassava chips
2. Observation of cassava chips production planning

Observation production process examines the raw materials to be processed, the equipment used and the products resulting from the production process. Meanwhile, observation of production planning examines how the company meets production needs, the observation variables are shown in Table 1 below.

Tebel 1. Research variables

Research Variables	Indicator	Description
Production Process	Raw Materials	Basic materials used in the production process
	Equipment used	Tools needed to support the production process
	Products from the production process	Goods produced after going through a series of production stages."
Inventory Planning	Production Schedule	A detailed plan that regulates the time and sequence of implementation of various activities in the production process
	Raw material requirements	The amount of material needed to support the production process
	Supplier of raw materials	The party in charge of providing the raw materials needed for the production process
	Schedule of raw material usage	Regulating the time and sequence of use of materials in the production process

The initial step was observing firsthand in the field, then recording and interviewing relevant parties if needed [8]. The results of the observation continue with analysis using a descriptive method in order to describe the production process and the production planning process of cassava chips carried out by business houses.

3. Results and Discussion

3.1. Cassava Chips Production Process

The production process of cassava chips is mainly made from cassava obtained from suppliers, cassava is placed in a storage warehouse, Production process of cassava chips can be seen in Figure 1.

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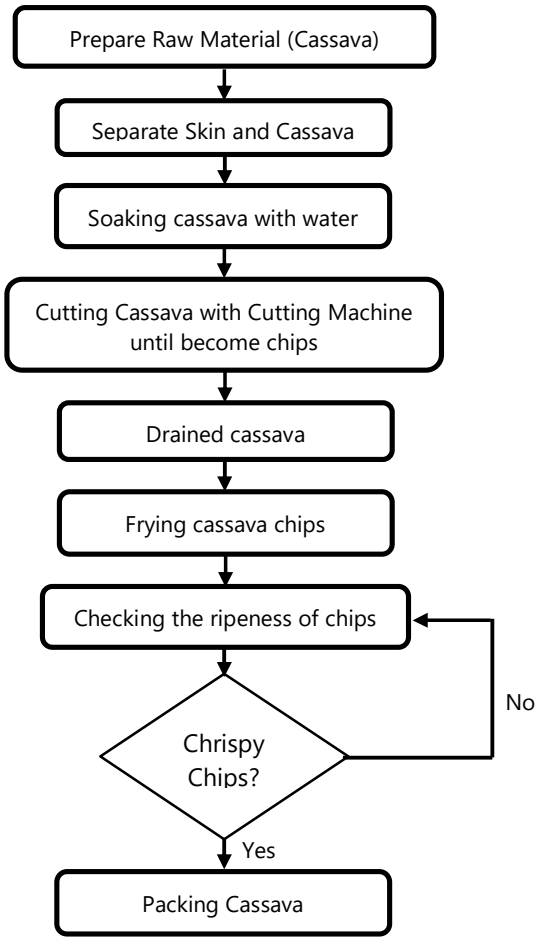

Figure 1. Cassava Chips Production Process

The cassava chips production process goes through several stages of the process starting with the preparation of raw materials shown in Figure 2.

Figure 2. Cassava raw materials

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Raw cassava will be separated between skin and cassava. This separation is done manually by the operator using a kitchen knife. The business house uses operator labor to minimize production costs and it does not use special technology [9], Storing raw materials in warehouse that also serves as a place for the separation process can minimize movement [10], the cassava separation process is shown in Figure 3.

Figure 3. Process of separating skin and cassava

Cassava that has been separated from skin will then be soaked using well water until it is clean, after cleaning the cassava will be cut into certain thickness until it forms chips. The cutting process by the operator allows for checking if there are any discrepancies [11].

Cutting cassava into chips using a cutting machine with work principle a rotating blade will cut the cassava that is pushed towards the cutting knife, so cassava cut will be in a desired thickness level. The cutting results are then placed on a container special which enables to reduce moisture content. The process of cassava frying uses a big pan with hot oil to make the cassava crispy. Using over medium heat and often stirring the cassava make them cooked evenly. The fried cassava is then drained from oil and packaged using plastic, so that the chips can be crispy as long as possible as shown in Figure 4.

Figure 4. Finish goods of casava chips

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3.2. Production Planning of Cassava Chips

Production planning is adjusted to availability of raw materials that have been ordered before the stock in the warehouse runs out [12]. The business house determines the time to order raw materials before production is carried out [13]. Cassava chips production is carried out according to schedules and working days as shown in Table 2.

Table 2. Data of actual production planning schedule for cassava chips

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
schedule	off	Production Process	off	Production Process	off	Buy Raw Material, Production Process	off

The schedule production of balado cassava chips in a week include holidays, production processes day, and purchase of raw materials day. Holidays are on Mondays, Wednesdays, Fridays, and Sundays while the production process is on day Tuesdays, Thursdays, Saturdays and the purchase of raw materials is done on Saturdays.

The production of cassava chips requires raw materials that must be prepared by home industry as shown in the following table.

Table 3. Raw materials for cassava chips

Raw Materials
Cassava
Red Chili
Garlic
Lime
Cooking oil
Sugar
Salt

Needed inventory according to production need [14], [15] the supplier which supply inventory which used in production process show in Table 4.

Table 4. Supplier balado cassava chips

Raw Materials Inventory	Supplier Name
Cassava	Supplier 1
Red Chili	
Garlic	Supplier 2
Lime	
Cooking oil	
Sugar	Supplier 3
Salt	

The purchase of raw cassava is carried out at supplier 1 by looking at the condition of the cassava with its straight and fat stem in the middle, the outer peeling skin of the cassava, and the white color of the cassava. The purchase of raw materials for red chili is done at supplier 2 by carefully observing at the condition of red chili including its color, its long size, and its straight shape. Purchase of raw garlic raw is carried out at supplier 2. The quality that will be chosen for garlic is a dry, white, and dense size of the onion head. The purchase of lime is carried out at supplier 2, by choosing quality for lime which comprises round shape, soft skin, and yellowish-green color. The purchase of cooking oil is carried out at supplier 3. The quality chosen for cooking oil is intact packaging, the expiration date, and like water texture. The purchase of granulated sugar is carried out at supplier

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3. The quality chosen for salt is intact packaging, the expiration date and does not clump. The quantity needed in purchasing at the supplier is shown in Table 5.

Table 5. Quantity of inventory raw materials

Raw Materials Inventory	Quantity (kg)
Cassava	120
Red Chili	9
Garlic	1
Lime	3
Cooking oil	27
Sugar	9
Salt	0.25

The inventory used for production needs according to the schedule of raw materials use to produce cassava chips is shown in Table 6.

Table 6. Schedule for the use of raw materials for balado cassava chips

Raw Materials Inventory	Inventory first	Day					
		Tuesday		Thursday		Saturday	
		Amount Used (kg)	Remaining Inventory (kg)	Amount Used (kg)	Remaining Inventory (kg)	Amount Used (kg)	Remaining Inventory (kg)
Cassava	120	40	40	40	0	40	80
Red Chili	9	3	3	3	0	3	6
Garlic	1	0.3	0.3	0.4	0	0.3	0.7
Lime	3	1	1	1	0	1	2
Cooking oil	27	9	9	9	0	9	18
Sugar	9	3	3	3	0	3	6
Salt	0.25	0.075	0.1	0.1	0	0.075	0.175

Based on Table 5, the initial inventory is the raw material after carrying out the raw material purchase process. The amount used is for the production process. Residual inventory is the remaining inventory in the raw material warehouse after carrying out the production process from the amount used. The comparison of the initial inventory amount and the amount of raw material inventory at the end of the week is shown in Figure 5.

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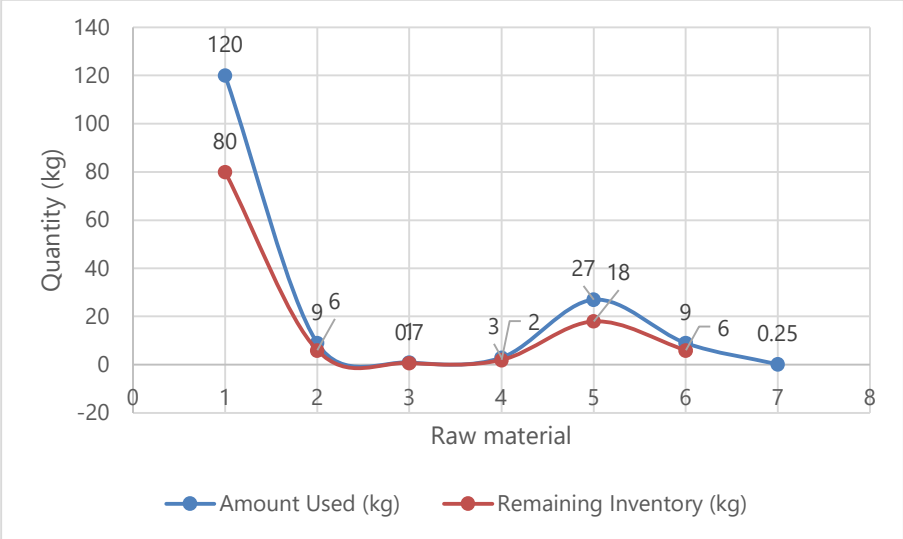

Figure 5. Comparison of initial inventory and final inventory of cassava chips raw materials

The raw materials used every day are cassava weigh 40 kg, 3 kg of red chili pepper, 0.3 kg of garlic, 1 kg of lime, 9 kg of cooking oil, and salt weigh 0.25 kg. The remaining raw material inventory available on Tuesday for cassava raw materials is 40 kg, red chili is 9 kg, garlic is 0.3 kg, lime is 1 kg, cooking oil is 9 kg, sugar is 3 kg, and salt is 0.1 kg. The remaining raw material inventory available on Thursday for cassava raw materials is 0 kg, red chili is 0 kg, garlic is 0 kg, lime is 0 kg, cooking oil is 0 kg, sugar is 0 kg, and salt is 0 kg. The remaining raw material inventory available on Saturday for cassava raw materials is 80 kg, red chili is 6 kg, garlic is 0.7 kg, lime is 2 kg, cooking oil is 18 kg, sugar is 6 kg, and salt is 0.075 kg.

4. Conclusion

The production process of cassava chips begins with the preparation of cassava raw materials and then the process of separating the skin from cassava. It was then followed by the process of cutting cassava into a certain size using a special machine operated manually. Moreover, the process of frying cassava uses a large pan while the process of packaging using plastic is the last step of production. Planning the production of cassava chips commences with preparing the needs of raw materials for production in 3 days in a week ordered from 3 different suppliers to prepare production needs. The quantity needed in purchasing from suppliers includes 120 kg of cassava, 9 kg of red chili, 1 kg of garlic, 3 kg of lime, 27 kg of cooking oil, 9 kg of sugar and 0.25 kg of salt. The initial supply of cassava raw materials provided is 120 kg and at the end of the week the production inventory needs are 80 kg left from the use of 40 kg at the end of the week for the next production.

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