

Analysis of the Application of Material Requirement Planning Method in Nature to Achieve the Production Targets of the Moraja Donggala Social Forestry Business Group

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ABSTRACT

This study aims to analyze the Application of Material Requirement Planning (MRP) in achieving production targets in the Moraja Social Forestry Business Group (KUPS). The type of research used is a descriptive qualitative method using Material Requirement Planning (MRP) analysis. The results showed that KUPS Moraja has not been able to fully implement MRP, which is in the form of a Master Production Schedule and is on a manufacturing or manufacturing scale. Then related to planning, scheduling orders and controlling raw material inventory items have been carried out even with a conventional system where the Master Production Schedule (MPS) KUPS Moraja carries out or schedules production once a month in week 2 (two) or if there are orders from customers so that in a year the production order schedule occurs 12 (twelve) times. Kups Moraja on Bill of Material (BOM) consists of three processes, namely the drying, grinding, and packing processes. Furthermore, the Inventory Record (Inventory Record), it can be known that the raw materials used during the 2021 period were 39 kg 06 ounces of Moringa leaves. Then for the lead time, the entire production process takes 7 (seven) days, which consists of stages, namely the drying process of Moringa tea takes 5 days, while the grinding process of Moringa tea takes 1 day and the packaging process takes 1 day. Overall, the supply of Moringa raw materials has been controlled using conventional techniques.

Keywords: MRP; Production Targets

INTRODUCTION

Along with the development of science and technology that is increasingly modern, the business world is growing rapidly in Indonesia (1). The growth of this business world has caused fierce competition between companies that is increasing, especially after the country experienced natural disasters and the Covid-19 pandemic outbreak. There is fierce competition between companies that is increasing, so many companies continue to try to continue to exist in their own product business fields. Large, medium or small companies

will compete with each other to improve efficiency in their business fields in the face of very fierce competition in order to maintain the continuity of the company's operations. The thing that needs to be considered by the company is how to strive for ways of controlling raw materials in achieving production targets (2).

The required raw materials should be sufficiently available so as to guarantee production targets. However, the availability of raw materials should not be too large, so that the capital embedded in inventory costs and other costs affected by the presence of inventory is also not too large and should not be too small, because it can slow down the production process. The continuity of the production process in an enterprise is influenced by various factors, including the inventory of raw materials which are the main elements in the smooth running of the production process (3).

In raw material procurement companies, there are often unexpected problems, one of which is a shortage of raw materials which results in the production process not being able to run smoothly, so that a control of raw materials is needed so that there is no shortage of raw materials for the company (4). For this reason, it is important for every company to control the inventory of raw materials so that there is no obstruction in the production process. Sufficient inventory of raw materials can facilitate the production process so that the goods or services produced can guarantee the effectiveness of marketing activities, namely providing satisfaction to customers because if the goods or services produced are not available, the company loses the opportunity to make the market and the company cannot supply goods at an optimal level (5).

Teh is a very common drink in our daily lives (6). The habit of drinking tea is not only known in Indonesia but also almost all over the world. Tea contains many health benefits. According to some research results, tea contains compounds that are able to treat a number of minor diseases and prevent attacks of various severe diseases. In addition, because tea is a natural drink, it is relatively safe from adverse side effects (7).

The Moraja Social Forestry Business Group (KUPS) is a business engaged in the production of Moringa Tea. One of the reasons for choosing the object of this study, is to consider that the sale of Moringa tea has a very high market in addition to the large number of consumers' interest in Moringa tea, this is due to the fact that Moringa tea is not only famous for its benefits and affordable selling price. In the production process, one of the types of materials used by KUPS Moraja is Moringa leaves. However, the processing of Moringa tea is very limited due to the lack of land to plant Moringa trees and care for the Moringa, while the materials used in the business must be of good quality.

In tabel 1, the trend of Moringa tea production level is presented at KUPS Moraja, where it can be seen that the level of production that can be achieved by KUPS Moraja every month ranges from 10-28 pieces throughout 2021.

Table 1. Production Rate Trend

No	Month	Production Rate	Price / pcs	Total Revenue
1.	January	28 pcs	IDR 35,000.-	IDR 980,000.-
2.	February	25 pcs	IDR 35,000.-	IDR 875,000.-
3.	March	25 pcs	IDR 35,000.-	IDR 875,000.-
4.	April	23 pcs	IDR 35,000.-	IDR 805,000.-
5.	May	20 pcs	IDR 35,000.-	IDR 700,000.-
6.	June	10 pcs	IDR 35,000.-	IDR 350,000.-
7.	July	10 pcs	IDR 35,000.-	IDR 350,000.-
8.	August	12 pcs	IDR 35,000.-	IDR 420,000.-
9.	September	20 pcs	IDR 35,000.-	IDR 700,000.-
10.	October	25 pcs	IDR 35,000.-	IDR 875,000.-
11.	November	26 pcs	IDR 35,000.-	IDR 910,000.-
12.	December	26 pcs	IDR 35,000.-	IDR 910,000.-
Total Sales for 1 Year				IDR 8,750,000.-

Data source : KUPS Moraja, 2021

Based on the description of the sales table above, it is known that the total sales throughout 2021 are IDR 8,750,000, - with a total production output of 250 teas sold. From the results obtained at this time, it seems that the Moraja KUPS Moraja Moringa tea business can still be improved again by improving the quantity and quality of production produced. In addition, it is necessary to review the raw material control system and efforts to achieve production targets so that the Moraja KUPS is able to manage the availability of raw materials in order to achieve production targets and for business continuity in the future. Based on this, the author is interested in conducting a study entitled "Analysis of the Application of the Material Requirement Planning (MRP) Method in Achieving moringa tea production targets in the Moraja Social Forestry Business Group (KUPS)".

METHOD

The type of research used by researchers is qualitative. The data collection method used in this study was through wawancara, dokumentasi, observasi, kuesioner or angket, and studi Pustaka.

Data Analysis Methods

In the context of research, data analysis can be interpreted as an activity of discussing and understanding data in order to find meaning, interpretation and certain conclusions from the entire data in the study (8). The research conducted will take place in October to December 2021.

Miles and Hubberman have several data analysis methods that are divided into 4 large parts, namely: Data Collection, Data Reduction, Data Presentation, Conclusion Drawing (9).

RESULTS AND DISCUSSION

Needs and Control of Raw Material Inventory

Moraja Social Forestry Business Group (KUPS), in producing the moringa tea production process, the main ingredient is sourced from government-owned land that is managed independently to produce Moringa plants. Based on interviews conducted by researchers with informants responsible for raw materials for Moringa tea production in Loli Village, Donggala Regency, regarding the types of raw materials provided in producing Moringa tea are:

"In producing Moringa tea, there is only one raw material that we use, namely Moringa leaves in our land" (interview on December 10, 2021)."

In choosing Moringa leaves, it is necessary to pay attention to the quality of age of the Moringa tree. This is in line with the results of an interview with the head of the Moraja KUPS group where "In choosing Moringa leaves, we must pay attention to the damage and age of the tree" (interview on December 10, 2022). Then he also added that mainly in the selection of Moringa leaves used must be those that are still freshly harvested. This is done to maintain the taste of kups Moraja's tea products.

Furthermore, the need for raw materials for the Moringa plant in one production as conveyed in the following interview results:

"The raw materials used in one order are as much as 5 kg of Moringa leaves. And in our raw supply is quite available, but when the Moringa leaves we picked there was damage (the moringa was yellow and there were caterpillars) that was one of our obstacles in the supply of raw materials when the Moringa we picked was damaged and our lack of land in planting Moringa trees" (interview on January 10, 2022).

Another obstacle faced by the Moraja KUPS when the availability of raw materials is insufficient for the production process, so the Moraja KUPS conducts a search for raw materials in forests and on community land. This is generally done at least 5 searches in one production. As for the process of finding raw materials using motorized transportation around the Loli area and Donggala city.

Another factor that can affect the quality of raw materials is the soil formation factor. In addition, a good and proper storage place also affects the quality of raw materials. With the fulfillment of the quality and quantity of Moringa raw materials, the moraja KUPS business continues.

The composition needed in the supply of raw materials is Moringa Tea. The method of making and packaging Moringa Tea is from the process of harvesting Moringa leaves that have been picked in the field of the place, then the plucked Moringa leaves are removed from

the twigs (shriveled) done after approximately 4 hours after picking, after that the Moringa leaves are washed thoroughly (washed / rinsed in running water at least 3 times washed), after washing the Moringa leaves are spread in a room to dry for approximately 5 days, after drying the Moringa leaves are mashed until they become a coarse powder. Then the next process, packing Moringa leaves that have become coarse powder is put in a dipping bag, after being put in a pressed in plastic packaging after that it is put in a box. Together with this is attached the production level during 2021 amounting to 250 pcs of Moringa teabags, where KUPS Moraja only produces 1 production a month and according to customer requests

Table 2. Sales Production Rates During 2021

No	Month	Production Rate
1.	January	28 pcs
2.	February	25 pcs
3.	March	25 pcs
4.	April	23 pcs
5.	May	20 pcs
6.	June	10 pcs
7.	July	10 pcs
8.	August	12 pcs
9.	September	20 pcs
10.	October	25 pcs
11.	November	26 pcs
12.	December	26 pcs
		250 pcs

Source data: KUPS Moraja, 2021

Material Requirement Planning (MRP)

Material Requirement Planning (MRP) is a method used for planning, scheduling orders and controlling raw material inventory items. The MRP components consist of a Master Production Schedule (MPS), Bill of Material (BOM), Inventory Record, and Lead Time.

Master Production Schedule (MPS)

The implementation or production schedule at KUPS Moraja is once a month in the 2nd week (two) or if there is an order from the customer so that in a year the production order schedule occurs 12 (twelve) times. And the existence of MPS components can be known how many and when a component is needed and adjusted to the MPS schedule, by procuring the necessary raw material inventory so that the production process can run smoothly.

Bill Of Material (BOM)

Moringa tea which is one of the income from KUPS Moraja consists of the first three production processes, the drying process of Moringa leaves this process is carried out for 5 days in a closed room, the next process of grinding Moringa leaves using a blender machine and the last process is processed into the box.

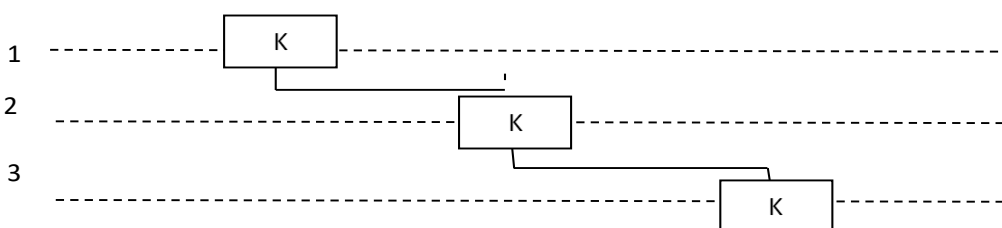


Figure 1. Moringa Tea Semi-Finished Process Structure

Information:

K : Moringa

1 : Drying process stage

2 : Grinding process stage

3 : Packing and delivery stage

The picture above is a production process of a piece into Moringa tea where the process starts from the drying stage, the grinding process, so that the process is put into the package.

Inventory Record (Catatan Persediaan)

In general, inventory recording is carried out to make it easier for KUPS Moraja to check the amount of available stock of goods. KUPS Moraja requires raw materials on the same day when carrying out the production process, to maintain the freshness of the material.

Table 3. Raw Material Requirements

No	Month	Product Needs
1.	January	5 kg
2.	February	4 kg
3.	March	4 kg
4.	April	3.5 kg
5	May	3 kg
6.	June	1.5 kg
7.	July	1.5 kg

8.	August	1.5 kg
9.	September	3 kg
10.	October	4 kg
11.	November	4 kg, 3 ounces
12.	December	4 kg, 3 ounces

Data source : KUPS Moraja, 2021

Based on the table above, with the Inventory Record, it can be known that the raw materials used during the 2021 period were 39 kg 06 ounces of Moringa leaves used for production at the Moraja KUPS.

Lead Time

Lead Time is the grace time / pause when in the preparation of Moringa tea production starting from the confirmed customer order from the delivery of the goods to the hands of the buyer.

Table 4. The Moringa Drying Process

Component	Lead Time (Hari)
Moringa (drying process)	5 days
Moringa (grinding process)	1 day
Moringa (packing process)	1 day

Data source: KUPS Moraja, 2021

According to the table above, it is explained that the drying process of Moringa tea takes 5 days, while the grinding process of Moringa tea takes 1 day and the packaging process takes 1 day.

Based on this, it can be concluded that the Moraja KUPS has not fully implemented the MRP, which is a Computer Oriented Approach which consists of a set of procedures, decision rules and a set of recording mechanisms designed to describe a Master Production Schedule which is on a manufacturing or manufacturer scale. Then related to planning, scheduling orders and controlling raw material inventory items have been carried out even with a conventional system where the Master Production Schedule (MPS) KUPS Moraja carries out or schedules production once a month in week 2 (two) or if there are orders from customers so that in a year the production order schedule occurs 12 (twelve) times.

The Moraja KUPS on the Bill Of Materials (BOM) consists of three processes. The stages of the process are: 1) The stages of the drying process where moringa leaves are dried in a closed and clean room for 5 days. 2) The stage of the grinding process, where the Moringa leaves that have dried and shrinkage are ground to a coarse powder, this process is carried out for 1 day. 3) The stages of the packing process, where the Moringa leaves are packed, this process is carried out for 1 day

Furthermore, the Inventory Record ,where with the Inventory Record, it can be known that the raw materials used during the 2021 period are 39 kg 06 ounces of Moringa leaves. Then for the lead time, the entire production process takes 7 (seven) days, which

consists of stages, namely the drying process of Moringa tea takes 5 days, while the grinding process of Moringa tea takes 1 day and the packaging process takes 1 day.

The need for moringa raw material supplies so far, is quite controlled with conventional techniques where when the availability of raw materials is insufficient for the production process, a search for raw materials will be carried out in the forest and on community land. As for the process of finding raw materials using motorized transportation around the Loli area and Donggala city. Time schedule, once a month and in the second week of each month so that KUPS Moraja does not experience problems in meeting its production quota. In line with the opinion of Iskandar Nopandi Ariadi (2019) with the title Inventory Control Analysis of raw materials in shoe products to improve the smooth production process in the ourrich home industry. with the results of research stating that the control of raw material inventory supports the smooth running of the production process. Thus, the Moraja KUPS has also achieved control of production raw materials, using conventional implementations, namely inventory recording and production scheduling.

CONCLUSION

This study concluded that the Group of Social Forestry Enterprises (KUPS) Moraja has not been able to fully implement the MRP, which is in the form of a Master Production Schedule and is of a manufacturing or manufacturing scale. Then related to planning, scheduling orders and controlling raw material inventory items has been carried out even with a conventional system where the Master Production Schedule (MPS) of the Moraja Social Forestry Business Group (KUPS) carries out or schedules production once a month in the 2nd week (two) or if there are orders from customers so that in a year the production order schedule occurs 12 (twelve) times.

SUGGESTION

Recommendations for suggestions, bagi Social Hunananan Business Group (KUPS) Moraja hmore courageous flow to foster the relationship of each Business Group in order to improve management in terms of raw material control, such as cooperation between groups in Moringa Processing so that raw material control can run well and as expected.

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