

MODEL OF USED FLOUR SACK STOCK INVENTORY FOR MSMEs WITH LIMITED CAPITAL CASE STUDY IN CV. KEMENANGAN BERSAMA

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Abstract-The purpose of this research is to find out the inventory model of used flour sacks stock applied by CV. Kemenangan Bersama to remain available to meet the needs of its customers. The research method used is a descriptive qualitative approach. The data used in this study are primary data and secondary data. Primary data was obtained through direct interviews with business owners using a list of questions in the form of a questionnaire, while secondary data, documents/notes obtained from CV. Kemenangan Bersama. The results showed that to get sacks of used flour and ex-printed sizes of 25 kg, CV. Kemenangan Bersama is working with several suppliers, such as: a). Cooperation with companies that use wheat flour in their production process, such as noodle factories, bakery factories and so on in Jakarta and North Sulawesi. b). Buying from a job site for used sacks in the city of Jakarta. In this research, the CV Kemenangan Bersama sack stock inventory model can be overcome by using the Economic Order Quantity (EOQ) inventory model.

I. INTRODUCTION

Inventory plays a real role in the ability of the supply chain to support competition, if the company's competitive strategy requires a high level of responsiveness, then the company can use inventory to achieve this, by placing a lot of inventory to meet customer needs. On the other hand, if the competitive strategy that must be used is to use cost leadership, the company can also use inventory to make it more efficient, by reducing the amount of centralized inventory and supporting a low-cost producer competitive strategy.

Inventory problem is a problem that is always faced by decision makers in the field of inventory in a company or industry. Inventories can be interpreted as goods that are stored for use or sale in the future or period to come. One of the important problems in inventory is the difficulty in determining the amount of inventory that must be provided to meet the number of requests.

Stockpiling of goods results in unproductive invested capital and increases inventory costs, including storage costs and expired costs. Out of stock results in unmet demand and lost opportunities for profit. To overcome the accumulation of goods (if you order in large quantities but at that time the demand is down) and out of stock (if you order in small quantities but at that time the demand is up) it is necessary to implement a policy to place orders in varying quantities. Many inventory models have been studied and reviewed in various books and existing literature. However, the inventory models developed basically do not have a shelf life (expired) of goods. Therefore, researchers want to examine more deeply about this supply problem by conducting research with the title "Model of Inventory of Used Flour Sacks in MSMEs with Limited Capital Case Studies at CV. Kemenangan Bersama".

II. RESEARCH METHODS

The research method used is a descriptive qualitative approach. The data used in this study are primary data and secondary data. Primary data was obtained through direct interviews with business owners using a list of questions in the form of a questionnaire, while secondary data documents/notes obtained from CV. Kemenangan Bersama.

Data Analysis:

a. Calculating the most economical order quantity or Q with the formula:

$$Q = \sqrt{\frac{2 \cdot OS}{C}}$$

Where :

Q = The most economical order quantity C = Carrying cost per unit
S = Material use (in units) during one period O = Order cost

b. Calculating the total incremental cost (TIC) with the formula::

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$$C = \frac{Q}{Z} \cdot CH + \frac{R}{Q} \cdot CP$$

Where :

R= Needs for 1 year (175 bales x 12 = 2,100 bales)

Q= The most economical number of orders

CP = Order cost per order

CH = Carrying cost per unit

c. Calculating EOQ with the formula:

$$EOQ = \frac{\sqrt{2 \times R \times S}}{P \cdot I}$$

Where:

R= Needs for 1 year (175 bales x 12 = 2,100 bales)

S= Ordering cost

CH = Carrying cost per unit

CP = Order cost per order

Before calculating the EOQ, first look for the carrying cost in percentage

d. Calculating the optimal order frequency per 2 months with the formula:.

$$NO = \frac{\sqrt{AC}}{2P}$$

Where:

No = Optimum order frequency per year on EOQ

A= Number of sack bales needed per year

P= Ordering Cost,

C= Carrying Cost

III. DISCUSSION

CV Kemenangan Bersama is one of the MSMEs located in Tatelu Rondor Jaga 2 Village, Dimembe District, North Minahasa Regency, which is engaged in trading used plastic sacks of wheat flour and new ex-printed sacks. New ex-printed wheat flour sacks are new sacks that have never been used but at the time of printing the wheat flour brand logo there was an error or print defect.

This location is in the people's gold mining area, to be precise in the village of Tatelu – Talawaan and based on a mutual agreement that any acquisition of land or stone containing mined gold must be loaded in a closed container in this case a sack and used as a standard measure by the Land Owner or so-called with the “Landlord” to be deducted from the proceeds taken by the miners. This causes the demand for sack containers to increase and creates business opportunities for several other MSMEs to provide used and newly printed sacks.

There are several reasons used plastic sacks of flour, or new ex-printed 25 kg sacks, are in demand by miners, namely:

- Made of thick, elastic, dense fiber, and not easily damaged when used to pull rep rock, or soil containing gold from mine pits.
- Most of the supporting transportation to the mine site is using a "Rambo Motor" which is an ordinary motorbike that has been modified according to the needs of traveling to a mining location with difficult terrain. Therefore, if the rep owner uses a sack size outside the existing standard, most carriers will refuse on the grounds that it is too large because it is very risky for the carrier considering the terrain is very difficult to reach the mining location.

Figure 3.1 CV. Kemenangan Bersama



Source : Google Maps

Sack Stock Ordering Cycle

To get used flour sacks and ex-printed 25 kg size, CV. Kemenangan Bersama cooperates with several suppliers, such as:

1. Cooperation with companies that in the production process use wheat flour, such as noodle factories, bread factories, and others located in Jakarta and North Sulawesi.:
2. Buying from a job site for used sacks in the city of Jakarta.

Companies that use flour in the production process will usually sell used sacks of flour containers as waste that can be reused, and recycled to the job owners of the sack collectors who have collaborated with a certain price. Usually the collector buys all the waste sacks without being sorted and will choose which ones are still feasible, sold as used flour sacks and which will be sold as boncos (used sacks sold at cheap prices for recycling).

Most of the stock sacks CV. Mutual Victory is obtained by buying from a container originating from Jakarta and sending it via a 20-foot full container ship expedition every 2 months. Container capacity of 20 feet, for used sacks of flour measuring 25 kg, can load as many as 75,000 pieces of used sacks and for new ex-printed sacks as many as 90,000 sheets at a price of door to door service IDR 16,000,000, excluding loading and unloading fees (2,000,000.). Used flour sacks of 25 kg were purchased at a price of 1,200 per sheet, and ex-printed flour sacks were purchased at a price of 1,300 per sheet.

Apart from that, CV Victory Bersama partnered with the Jordan bakery in Tomohon to collect sack waste every 2 weeks with a minimum one-time transport capacity of 1,800 pieces at a price of Rp. 1,200 per sheet.

Figure 3.2 Containers containing sacks ready to be shipped from Jakarta



Source : CV Kemenangan Bersama

Sack Stock Capacity Applied By CV. Kemenangan Bersama.

Used flour sacks and new ex-printed sacks which are sold in the form of large bales containing 200 pcs of sacks at a price of Rp. 315,000., for used flour sacks and Rp. 325,000., ex-printed sacks. The average sales of CV Victor Bersama sacks are 175 to 200 bales per month. To meet stock requirements, reorders must be made at the end of each month with the following details:

1. The initial stock that entered the 20-foot container was 75,000 sheets, or 375 bales for used sacks of flour and 90,000 bales for ex-prints.
2. Sales for an average of 175 bales to 200 bales, the remainder at the end of the first month is 175 to 200 bales.
3. To place an order, it takes 1 month for the goods to arrive at the warehouse, which results in the stock of sacks being depleted by the time the goods arrive. This condition was due to the fact that CV Victory Bersama's capital was limited to only ordering a 20-foot full container once at the start, so it had to find a solution by taking sacks from the Jordan Bakery Factory in Tomohon City to fill the shortage of existing stock.
4. The obstacle faced when the stock of used sacks is too much is rats, because used sacks contain wheat flour so rats eat a lot if storage is below, so a storage fee of IDR 100 per sheet can be charged.

Calculation of Inventory Inventory CV Victory Together Using the Model

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Economic Order Quantity (EOQ)

Stock requirements per month CV. Kemenangan and order frequency can be seen in table 3.1 below:

Table 3.1 Frequency of Ordering CV. Kemenangan Bersama

Information	Frequency of Ordering Goods		
	Month I	Month II	Month III
Inventory, beginning of the month (bale)	375	200	400
Monthly sales	175	175	175
Remaining stock at the end of the month	200	25	225
Waiting time	30 days		Reorder

Source: CV. Kemenangan Bersama

The inventory model of CV. Kemenangan Bersama sack stock can be solved by using the Economic Order Quantity (EOQ) inventory model, with the following steps:

1. Calculate the most economical order quantity or Q with the formula:

$$Q = \sqrt{\frac{2 OS}{C}}$$

Where :

Q = Number of orders, the most economical C = Carrying cost per unit S= Material usage ((in units) during one period O = Cost of orders

$$Q \text{ Used sack} = \sqrt{\frac{2 (48.000 \times 375)}{100}}$$

$$Q \text{ Used sack} = \sqrt{\frac{2 \times 18.000.000}{100}}$$

$$Q \text{ Used sack} = \sqrt{\frac{36.000.000}{100}}$$

$$Q \text{ Karung bekas} = \sqrt{360.000} = 600 \text{ unit}$$

2. Calculating the total incremental cost (TIC) with the formula:

$$C = (Q/2 \cdot CH) + (R/Q \cdot CP)$$

Where:

R= Needs for 1 year (175 bales x 12 = 2,100 bales)

Q= Number of orders, the most economical.

CH= Carrying cost per unit.

CP= Order fee per order

$$= \frac{600}{2} \cdot 100 + \frac{2100}{600} \cdot 48.000$$

$$= (300 \times 100) + (3,5 \times 48.000)$$

$$= (30.000) + (168.000) = Rp. 198.000$$

Calculating EOQ with the formula:

$$EOQ = \sqrt{\frac{2 \times R \times S}{P \times I}}$$

Where:

R= Needs for 1 year (175 bales x 12 = 2,100 bales)

S= Ordering cost

CH= Carrying cost per unit

CP= Order fee per order

Before calculating the EOQ, we must first look for the carrying cost as a percentage:

$$\text{Carrying cost } I = \frac{198.000 \times 100}{2} \times \frac{19.800.000}{2} \times 100 = \frac{2100 \times 220.000}{2} \times 100 = \frac{462.000.000}{2} \times 100$$

$$0,043 \times 100 = 0,0216 \times 100 = 2,16\%$$

$$\sqrt{\frac{2 \times (2100 \times 48.000)}{220.000 \times 0,0216}}$$

$$= \sqrt{\frac{201.600.000}{4.752}}$$

$$= \sqrt{42.424} = 205,97 \text{ atau } 206$$

Calculate the optimal order frequency per 2 months with the formula:

$$No = \sqrt{\frac{AC}{2P}}$$

Where:

No = Optimal order frequency per year on EOQ
 A = Number of bales needed per year

P = Ordering Cost

C = Carrying Cost

$$No = \sqrt{\frac{2.100 (100)}{2 \times 48.000}}$$

$$No = \sqrt{\frac{210.000}{96.000}} = \sqrt{2,1875} = 1,479 \text{ times or } 1.5 \text{ times}$$

IV. CONCLUSION

1. To get used sacks of flour and ex-printed sizes of 25 kg, CV. Kemenangan Bersama has collaborated with several suppliers, such as: (1) Collaboration with companies that use wheat flour in their production process, such as noodle factories, bread factories, and others others in Jakarta and North Sulawesi. (2) Purchased from a job site for used sack storage in the city of Jakarta.
2. In this research, CV. Kemenangan Bersama's sack stock inventory model can be overcome by using the Economic Order Quantity (EOQ) inventory model.

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