
EXPERIMENT 11 STUDY OF STORE KEEPING PRACTICES, INVENTORY CONTROL AND MAINTENANCE OF VARIOUS RECORDS

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11.1 INTRODUCTION

Store keeping, practice, inventory control and maintenance of record in a dairy plant/ milk union is an important aspect of the dairy business. During handling and processing of milk the operations can not be delayed as we are dealing with a perishable commodity. Therefore, the quick availability of raw material, spare parts of milk processing equipments and utilities like electricity, refrigeration and boiler etc must be ensured even at odd hours. To make the required material quickly available maintenance of store, inventory control and record of all the material must be proper and upto date.

11.2 OBJECTIVES

1. comprehend the store keeping practices of a milk union;
1. identify different methods of keeping inventory; and
1. appreciate the ways and means to control the inventory to reduce the cost.

11.3 EXPERIMENT

i. Principle

Milk processing involve various unit operations such as chilling the milk, its

clarification, separation of fat, homogenization, pasteurization etc. Raw items such as salt, sugar milk powder white butter are also required. To make these equipments continuously working and ready availability of the raw material proper maintenance of store and records is important.

ii. Requirements

i) Information Required

The following information is compiled from the milk union/dairy plant.

- a) The process of flow of information from the indenter to the purchase/store officer.
- b) The methods being used by the purchase officer for the purchase of various goods.
- c) The various proforma being used by the purchase officer for calling the quotations, approving the quotations, placing orders, receiving it at the union, approval of quality and finally passing it to the stores and intimating regarding the discrepancies (shortage and breakage, etc.).
- d) The records for receiving it in the stores.
- e) Bin cards/ledgers for each and every item received and stocked in the stores.
- f) Demand letter/note from various indenters and issue of store items (date wise).
- g) Criteria fixed for maintaining the stock level (minimum quantity, maximum quantity and reorder point).
- h) To decide the optimum number of orders to be placed per year for a particular item, the optimum number of units per order and the optimum number of days supply per order etc.
- i) The common method of classification of materials for inventory management are:
 - 1 ABC analysis (Always Best Control)
 - 1 VED analysis (Vital, Essential and Desirable)
 - 1 HML analysis (High, Medium and Low)
 - 1 FSN analysis (Fast, Slow and nonmoving)
- j) The basis of classification like the periodic consumption values, criticality of the component unit, price of material and consumption pattern of materials, etc.

ii) Material Required

- a) Paper, pencil/pen and calculator.
- b) Records and registers maintained at the store of the union/dairy plant.

iii) Procedure

- i) Check for the written information/ procedure available for store keeping practices.

The purchase officer and the store officer should be interviewed and the requisite/ additional information should be elicited. Following questions may be asked.

- a) How does the purchase officer know that a material is to be purchased?
 - b) Who sends the requisition?
 - c) What action the purchase officer takes on receiving the requisition?
 - d) What procedure is adopted in purchasing the material. Direct purchase or quotations?
 - e) In which case quotations are asked for and under which circumstances tenders are invited?
 - f) How and where material is received?
 - g) Where is it entered and how is it stored?
 - h) What type of records are made to know how much material is received and issued?
 - i) How is the material issued?
 - j) What are the levels for each item at which the inventory is to be replenished?
 - k) What should be the minimum and maximum level of stock to be maintained at the union?
- ii) After ascertaining the records maintained at the union, the date from the records maintained at the union is analysed. First of all a list of all the materials purchased by the union in a year is collected in a following manner:
- a) List of items along with their annual usage purchased during the year (Table 14.1).
 - b) These items are arranged according to annual usage in the descending order.
 - c) Cumulative annual usage for all the items is calculated. For example if the annual usage of item no 1 is Rs. 20,000. For the 2nd item the annual usage is Rs. 18,000 + 18,000 = 38,000. Again if for the 3rd item the annual usage is 15,000 then the cumulative annual usage will be 38,000 + 15,000 = 53,000. Like this we have to calculate the cumulative annual usage of all the items used in the milk union/ dairy plant.
 - d) Calculate the cumulative annual usage upto the last item say 500th, 1000th or any number of items purchased by the plant.
 - e) Calculate the per cent cumulative annual usage for all the items i.e. to 500.
 - f) On the basis of per cent of cumulative annual usage categorise the items into A, B and C categories. Account for about 75 per cent annual usage value items in A category, 15-20 percent in 'B' category and the remaining in 'C' category.
 - g) Calculate the per cent of total number of items in each category.

- h) Prepare the table as outlined in Table 11.2.
- i) Finally give the inference at the end that the percentage number of items in A, B and C categories are _____, ____ and _____ per cent respectively. Also mention that for _____ per cent items _____ per cent. The percentage of annual amount _____ per cent. The percentage of annual amount spent on B and C category items was _____ and _____ per cent, respectively.

Table 11.1 : Annual Consumption of different items

S.No.	Name of the Article	Annual	usage
1.			
2.			
3.			

- j) Since 'A' category of items are high usage value items, more attention is to be paid towards such items. Students are, therefore, advised to take observation of decisions regarding:
1. How much to order?
 2. When to order?
 3. What is the minimum safety level to avoid undue stock out?
 4. What is the optimum size of purchase?

Table 11.2: Classification for A B C Analysis

S.No.	Annual usage (Rs.)	Cumulative annual usage (Rs.)	% age of annual usage	% age of total number of items	Categorisation A / B / C
1					
2					
3					
5					
6					
:					
:					
:					
500					

- iii. To analyse and calculate these things following calculations are made:
- i) **Optimum Number of Orders Per Year:** The optimum number of order per year for a particular item can be worked out by using the following formula:

$$N = \frac{\sqrt{AC}}{2P}$$

Where N = Optimum number of orders per year.

A = Total value of the items used per year (in Rs.)

P = Ordering cost per order places.

C = Carrying cost expressed as a percentage of avera inventory.

The ordering cost and the carrying cost could be worked out as:-

$$\text{Ordering Cost} = \frac{\text{Total expenditure in the purchase section}}{\text{No. of order placed}}$$

$$\text{Where as Holding} = \frac{\text{Total expenditure in the store section}}{\text{Average inventory}}$$

For example if the total value of items used in a milk union is Rs. 10 Lakhs and the carrying cost is 15 percent the ordering cost being Rs. 20 then optimum number of orders per year would be:

Or Carrying Cost

$$N = \frac{\sqrt{10,00,000 \times 15}}{2 \times 20}$$

= 194 orders per year.

Or an order every 1.87 days.

Or an order every 46 hours.

ii) Optimum Number of Units Per Order: The formula used for working out the optimum number of units per order is:

$$Q = \sqrt{\frac{2AP}{IC}}$$

Where Q = Optimum number of units per order.

A = Total number of units used per year.

P = Carrying cost expressed as a percentage of average inventory.

I = Unit cost

If the usage of poly-film in a milk union during a particular year is 45,000 M.T. at a unit cost of Rs. 500. The ordering costper unit is Rs. 20 and carrying cost is 15 percent then the optimum units per order would be:

$$Q = \frac{\sqrt{2 \times 45000 \times 20}}{\sqrt{500 \times 0.15}}$$

= 155 M.T/order

iii) **Optimum Number or Days Supply Per Order:** Optimum number of days supply order is based on the fact that :

Ordering Cost = Carrying Cost

$$\text{Or } \frac{365}{Q} \times P = \frac{A \times 1}{365/Q} \times \frac{1}{2} \times C$$

$$\text{Or } Q = \frac{\sqrt{266450 \times XP}}{\sqrt{A \times I \times C}}$$

Where Q = Optimum number of days supply per order.

P = Ordering cost per order placed.

A = Total number of units per order.

I = Price of each unit.

C = Carrying cost.

If the order cost per order is Rs. 20 and the total number of units per order is 155. The price of each unit is Rs. 500 and the carrying cost is Rs. 25 than the optimum number of days supply per order would be:

$$Q = \frac{\sqrt{266450 \times 20}}{\sqrt{155 \times 500 \times 25}}$$
$$= 2.75 \text{ days}$$

iv Observations

About 70 – 80 percent items will be classified in ‘A’ category, 20 –30 percent in ‘B’ category and the remaining in ‘C’ category.

11.4 PRECAUTIONS

1. Take all the records and ledger into account and don't miss any observation.
2. All the expenditure should be taken for calculating the ordering cost and the storage cost.
3. For A B C analysis arrange the date in the descending order for annual usage value.
4. For each item, take the annual usage value irrespective of the number of items and item has been purchased.
5. Classify into A B C categories on the basis of cumulative annual usage value.

Exercise

Work out the optimum number of days supply per order assuming that:

Total no. or units used per year	=	30,000.00
Ordering cost per order placed	=	24.35
Carrying cost expressed as % of average inventory	=	20%
Price per unit	=	350
No. of days per year	=	365

Compute the following data for A B C analysis.

Item no.	Annual usage	Item no.	Annual usage
1	50000	26	33000
2	9000	27	1500
3	5000	28	80
4	3000	29	50
5	35000	30	48000
6	3000	31	300
7	1000	32	750
8	1000	33	100
9	100	34	250
10	50	35	15000
11	250	36	500
12	250	37	250
13	4000	38	1200
14	5000	39	8000
15	45000	40	750
16	12000	41	100
17	6000	42	200
18	700	43	500
19	700	44	250
20	500	45	2000
21	450	46	400
22	300	47	600
23	400	48	100
24	800	49	350
25	900	50	650