

A Study on Inventory Control Techniques in Apparel Industry

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ABSTRACT

Inventory management is one of the most important and least sexy aspects of running an apparel business. It can say, inventory management is the lifeline of apparel manufacturing business. In the Store is the place where every type of raw materials, spares, finished goods is kept in proper system. Inventory control means the accurate calculation and data of every type of raw materials, spares and finished goods in time to time store. Inventory control in textile mill are necessary because this paper focuses on the use of material planning methods to control material flow to inventories of purchased items. Five material planning methods are studied the EOQ method, the re-order point method, the ABC Analysis and VED analysis. The modes of applying a material planning method affect its perceived performance. In particular, the way of determining and the review frequency of safety stocks and lead times have great importance for the planning performance of MRP methods, while the determination and review of order points, review frequencies and run-out times were important for re-order point methods.

In this Research the Inventory analysis are used to analyse all the inventories like raw materials, spare-parts and finished products in the garment sector to control in the inventory techniques.

Key Words: Inventory management, Planning environment, Planning parameters, Materials requirements planning, Re-order point, Performance

INTRODUCTION

The main objectivity of production system is to convert raw material into useful products by value addition process. Just to aid this activity, various other resources are used. While closely examining the various elements of prime cost, material cost would dominate other cost. The materials which are required for the production purpose are normally procured and stored in raw material warehouses and then they are shifted to manufacturing plants if an organization has a number of plants. Even otherwise the raw materials are to be purchased in advance and stocked in stores mainly to smoothen the production process. Each functional head of material department will try to optimize the operation of its own function. But all of them should aim for a

common goal of providing materials with minimum total cost (cost of carrying, ordering cost, purchase cost, etc.) for better functioning of organization.

Inventories constitute the most significant part of current assets of large majority of companies. Effective management of inventories is to avoid or reduce unnecessary investment. Inventory is essential to provide flexibility in operating a system. The inventory can be classified into raw materials inventory, work-in-process inventory and finished goods inventory. The raw materials inventories remove dependency between suppliers and plants. The work-in-process inventory removes dependency between machines of a product line. The finished goods inventory removes

dependency between plant and its customers/market.

The main functions of inventory are summarized below:

- Smoothing out irregularities in supply.
- Minimizing the production cost.
- Allowing organizations to cope with perishable materials

OBJECTIVES OF THE STUDY

- To analyze the ratios of different materials in inventory.
- To analyze the classification of materials in stock.
- To propose Economic Order Quantity (EOQ) for reducing the ordering and carrying cost in inventory.
- To make suggestions for possible improvements.

BENEFITS OF HOLDING INVENTORIES

In the context of inventory management, the firm is faced with the problem of meeting two conflicting needs

- To maintain a large size of inventories of raw material and work-in-process for efficient and smooth production and a finished goods for uninterrupted sales operations.
- To maintain a minimum investment in inventories to maximize profitability.

An effective inventory management should:

- Ensure a continuous supply of raw materials to facilitate uninterrupted production.
- Maintain sufficient stock of raw materials in periods of short supply and anticipate price changes.
- Maintain sufficient finished goods inventory for efficient customer service.
- Minimize the carrying cost and time.
- Control investment in inventories and keep it at an optimum level.
- Enable the management to make costs and consumption comparisons between operations and periods.
- Facilitate cost accounting activities by providing a means for allocating material costs of products and

departments for comparison with other accounts.

- Facilitate purchasing economies.
- Serve as a means for the location and disposition of inactive and obsolete items of stores.
- Avoid both over-stocking and under-stocking of inventory.
- Maintain investments in inventories at the optimum level as required by the operational and sales activities.
- Facilitate furnishing of data for short-term and long-term planning and control of inventory.
- Minimize losses through deterioration, pilferage, wastages and damages.
- Ensure perpetual inventory control so that materials shown stock ledgers should be actually lying in the stores.

SCOPE OF THE STUDY

Inventory is actually 'money' kept in the storeroom and inventory management is the technique of maintaining the size of the inventory at some desired level keeping in view the best economic interests of an organization. Hence good inventory management is good financial management.

The researcher had tried to find the efficiency in inventory management; number of days needed for stock clearance and also proposed the material requirement planning. The analysis of the value of stock left at the end of the financial year and the forecasting of inventory consumption and weighted average price had been done.

This research would help the firm to avoid future shortages, to purchase the materials advance and at most economical price, to improve stock as per EOQ.

Efficient inventory management ensures reasonable utilization of equipment and labour and the industry would be able to build up reputation and better relationship with customers.

LIMITATION OF THE STUDY

- Time was a limiting factor
- Only few inventory control techniques analyzed (i.e., Ratio analysis, ABC analysis, EOQ analysis and VED

analysis) due to limited secondary data's.

REVIEW OF LITERATURE

For any research endeavour, a thorough review of literature is of paramount importance. Such an effort will highlight the past attempts made and provide clear comprehension of similar studies. An attempt has been made to study existing literature. The prominent of the studies one given below;

The study conducted by Lakshminarasimha, (2005), on the topic "Improving Inventory Level Accuracy in the Apparel Industry through Cycle Counting" reveals that cycle counting method plays an important role in both measuring the existing level, and attaining a specified level of accuracy, as well as improving accuracy. The cycle counting method like classifying the items into fast or slow moving items and reconciling with the system and bin stock for each individual SKU (Stock Keeping Unit) at a frequency of thrice, twice and once in a year. Cycle counting process includes three phases of activities Problem Identification phase, 80/20 phase, and Implementation phase. And the study reveals that in order to achieve the goal of desired accuracy, cycle times must be adjusted to compensate for increase or decrease in the inventory system's integrity.

The study conducted by Mahendra Pratap and Harwinder Singh (2007), on the topic "Evaluation and Economic Selection of Raw Materials 'Inventory Control Policy'" reveals that a proper inventory of raw materials is to be maintained in all organizations and as per proposed method, the shortage cost of the materials is eliminated with the introduction of buffer stock. Based on this proposed model, the total inventory cost determined by an economic selection is less than the existing system. In the study, inventory data of raw materials has been collected and a stochastic analytical inventory model has been economic selection of inventory control

factors and eliminating shortages of raw materials.

The study conducted by Gupta and Hira (2000), on the topic "Applicability of Forecasting Determination of Factors of Inventory Control" reveals that use of exponential smoothing method to ascertain the values of demand and lead time when these are stochastic variables. The study deals with when to order and how much to order.

RESEARCH METHODOLOGY

The study was confined to the cements factories, for a period of 45 days. Research is a systematic effort to gain knowledge. It can be referred to as the search of knowledge.

DATA COLLECTION

Data collection method is an important task in every research process; the data collected in research process were based on primary and secondary data.

The data used for the study is secondary data, which are collected from various inventory records maintained by the finance, purchase and store department, computer database, profit and loss account, magazines, periodical pamphlets and from the books of renowned authors.

ANALYSIS AND INTERPRETATION

Analysis

Analysis is the process of placing the data in an ordered form, combining them with existing information there by finding out its implication. Only analyzing brings out information from the data. Analysis involves organizing the data in a manner, while interpretation is what which explains the facts of figures.

Interpretation

Interpretation is the process of relating various factors with other information. It brings out the relation between the finding to the research objective and hypothesis framed for the study beginning.

ECONOMIC ORDER QUANTITY

Eq For The Year (2016 – 2017)

1. Calculation of EOQ

$$EOQ = \sqrt{((2*D*Co)/(P*Cc))}$$

D = Annual usage

Co = Ordering cost per order

P = Price per unit

Cc = Carrying cost in percentage

2. Calculation of ordering cost per order

Ordering cost per order = Total ordering cost ÷ Number of order placed per year

Total ordering cost = 720723.75

Number of orders placed last year = 72

Ordering cost per order = $720723.75 \div 72 = 10010.05$

3. Calculation of carrying charge

Carrying charge = Total carrying cost ÷ Average inventory

Average inventory = $(7645321+6046302) \div 2 = 6845811.5$

Total carrying charge = 411780

Carrying charge = $411780 \div 6845811.5 = 0.06016$

4. Calculation of price per unit

Annual consumption/ Quantity

Table 1: EOQ for the Year (2016 – 2017)

S.NO	ITEMS	QUANTITY	CONSUMPTION	EOQ(In Units)
1	Grey Fabric	95437	3778489	9053.7
2	Dyed fabric	92349	3700472	8852.5
3	Yarn	17237	3684484	1655.9
4	Accessories	30756	2779949	3401.6
5	Label	45453	2669489	5129.9
6	Chemicals	32439	2599989	3709.7
7	Maintenance Parts	21394	2279979	2612.7

Source: Secondary data

Interpretation:

The above table shows the ratio between net sales and inventory from (2016-2017). It indicates an increasing trend of

inventory turnover ratio, even though there is a slight decrease during the period (2016-2017).

SAFETY STOCK

SAFETY STOCK = ((MAX.LEAD TIME – NORMAL LEAD TIME)*DEMAND)

Demand = (Annual consumption/ Quantity)

Table 2: Showing safety stock for the year (2016 – 2017)

SL NO	COMPONENTS	MAX. LEAD. TIME	NORMAL LEAD. TIME	DEMAND	SAFETY STOCK
1	Grey Fabric	0.5	0.25	40	10
2	Dyed fabric	0.5	0.25	41	10.25
3	Yarn	0.5	0.25	21	5.25
4	Accessories	0.5	0.25	91	22.75
5	Label	0.5	0.25	58	14.5
6	Chemicals	0.5	0.25	81	20.25
7	Maintenance Parts	0.5	0.25	107	26.75

Source: Secondary Data

INTERPRETATION:

In the above table, safety stock for the various components calculated is shown. Actual demand is considered for each component for a period of one year. The maximum lead-time is considered to be 60

days and a normal lead time as 30 days and these were converted per annum. So, from these calculations, we are able to determine the level of inventory the company needs to hold as reserve stock per annum

RE ORDER LEVEL

REORDER LEVEL = ((MAX. USAGE* MAX.LEAD TIME) + SAFETY STOCK)

Table 3 showing re-order level of inventories for the year (2016 – 2017)

SL NO	COMPONENTS	MAX. LEAD. TIME	NORMAL. LEAD. TIME	SAFETY STOCK	RE ORDER LEVEL
1	Grey Fabric	0.5	0.25	10	10.125
2	Dyed fabric	0.5	0.25	10.25	10.375
3	Yarn	0.5	0.25	5.25	5.375
4	Accessories	0.5	0.25	22.75	22.875
5	Label	0.5	0.25	14.5	14.625
6	Chemicals	0.5	0.25	20.25	20.375
7	Maintenance Parts	0.5	0.25	26.75	27

Source: Secondary data

INTERPERATION:

In the above table, reorder level for the various components calculated is shown. The maximum lead- time is considered to be 60 days which is converted per annum. Hence from this table we are able to

determine the reorder level of various components of the firm.

ALWAYS BETTER CONTROL (ABC) ANALYSIS

Classification of the Items into Abc Category During The Period (2016-2017)

Table: 4 Classification ABC Category during the Period (2005-2006)

S.NO	ITEMS	ANNUAL USAGE	CUMMULATIVE ANNUAL USAGE	ANNUAL CUMMULATIVE PERCENTAGE	CLASS
1	Grey Fabric	3778489	3778489	13.02	A
2	Dyed fabric	3700472	7478961	25.78	A
3	Yarn	3684484	11166445	38.5	A
4	Accessories	2779949	13943394	48.07	A
5	Label	2669489	16612883	57.28	B
6	Chemicals	2599989	19212872	66.24	C
7	Maintenance Parts	2279979	21492851	74.11	C

Source: Secondary data

Interpretation:

As per the classification, values of the material are:

- A Class = 32588800
- B Class = 16612883
- C Class = 40705723

Inference:

"A class" inventory contain items that account for 66.31% of total value, or 76% of total items.

"B class" inventory contain items that account for of total value, 9.40%, or 8% of total items.

"C class" inventory will account for the remaining 24.29%, or 16 % of total items

VED Classification

Under this classification materials having low risk of shortage contributing to

low opportunity cost are considered as vital. Those having medium risk of shortage and medium opportunity cost are essential materials. Desirable are those having high risk of shortage and high opportunity cost. The VED analysis is done to determine the criticality of an item and its effect on production and other services. It is specially used for classification of spare parts. If a part is vital it is given 'V' classification, if it is essential, then it is given 'E' classification and if it is not so essential, the part is given 'D' classification. For 'V' items, a large stock of inventory is generally maintained, while for 'D' items, minimum stock is enough.

Table: 5 Combinations of ABC and VED Classification

Items	AV	AE	AD	BV	BE	BD	CV	CE	CD
1	Grey Fabric	•							
2	Dyed fabric		•						
3	Yarn				•				
4	Accessories			•					
5	Label					•			
6	Chemicals						•		
7	Maintenance Parts								•

Source: Secondary data

Interpretation:

Majority of the materials fall under the category of Control Vital (C, V), Control Essential (C, E), Control Desirable (C, D), Better Desirable (B, D), Better Vital (B, V), Always Desirable (A, D), and Always Vital (A, V).

REFERENCES

- Keith Howard, "Inventory management ", International Journal of Physical Distribution & Logistics Management, 1974, Volume : 5, Issue : 2.
- Richard A. Lancioni, Keith Howard, " inventory Management Techniques ", International Journal of Physical

- Distribution& Logistics Management, 1978, Volume: 8, Issue: 8.
- Don P. Holdren, Craig A. Hollingshead, “Differential pricing of industrial services”: The case of inventory financing Journal of Business & Industrial Marketing 1999, Volume: 14, Issue: 1.
 - Khairy A.H. Kobbacy, yansong Liang, “ Towards the development of an intelligent inventory management system ”, Integrated Manufacturing Systems, 1999,Volume: 10 Issue : 6.
 - Timothy L. Urban, “ The interdependence of inventory management and retail shelf management ”, International Journal of Physical Distribution& Logistics Management, 2002, Volume : 32, Issue : 1.
 - Mohamed A. Razi, J. Michael Tarn, “ Model for improving inventory management in ERP systems ”, Logistics information management ”, 2003, Volume: 16 Issue: 2.
 - Rajeev, “ Inventory management in small and medium enterprises ”, Management research news, 2008, Volume : 31, Issue : 9.

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