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"Study of Inventory Management System Case Study"

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ABSTRACT

Inventory management is a challenging problem area in supply chain management. Companies need to have inventories in warehouses in order to fulfil customer demand, meanwhile these inventories have holding costs and this is frozen fund that can be lost. Therefore, the task of inventory management is to find the quantity of inventories that will fulfil the demand, avoiding overstocks. This paper presents a case study for the steel manufacturing industry (Small Scale Industry) on inventory management. The relationship between the inventory management and company performance was determined based on inventory days and return on asset (ROA) analysis.Keywords --- ABC classification, demand forecasting methods, inventory management, replenishment policies

INTRODUCTION

Inventory is the supply of raw materials, partially finished goods called work-in-progress and finished goods, an organization maintains to meet its operational needs. It represents a sizeable investment and a potential source of waste that needs to be carefully controlled. Inventory is defined as a stock of goods that is maintained by a business in anticipation of some future demand. The quantity to which inventory must fall in order to signal that an order must be placed to replenish an item.Using an extension of a standard inventory-dependent demand model provide a convenient characterization of products that require early replenishment. The optimal cycle time is largely governed by the conventional trade-off between ordering and holding costs, whereas the reorder point relates to a promotions-oriented cost-benefit perspective. The optimal policy yields significantly higher profits than cost-based inventory policies, underscoring the importance of profit-driven inventory management.

RESEARCH METHODOLOGY

- The data has been collected through interface and discussions with the directors working with the division.
- Some important information taken through unstructured and structures interviews of the executive.
- Magazines and annual reports also used for the collection of necessary information.
- Research Papers used for the source of secondary data.

Sources of Data

The present study uses both primary and secondary data. Primary data is collected from the steel industry (Small scale industry) units in the sample area through a structured and unstructured questionnaire. In few cases to understand the depth of the issue and the sensitivity of the variables in the study, the scholar personally met experts in the industry having professional experience and had a personal interview using both structured and unstructured interview schedule. This helps in understanding the issue at broad prospective and to analyze the same in the research point of view. The secondary data is collected from both print and electronic media. The print media includes reports, magazines, journals, published research papers, thesis works, unpublished industry reports, newspaper reports and the other text books. The electronic media sources include digital data bases, web portals, indexed journals in open access portals, industry association reports etc.

Tools and Techniques

- ABC analysis
- Economic Order Quantity
- Re-Order Level
- Safety stock
- Inventory Turnover Ratio

Using these analysis going to answer following questions:

- What are Industrial problems in managing inventories?
- Which inventory policy optimum for Industry? Why? Show calculations.
- What should be the over level

ABC ANALYSIS

- It is based on proposition that
- Managerial items and efforts are scare and limited.
- Some items of inventory are some important than others.

ABC analysis is an inventory categorization technique. ABC analysis divides an inventory into three categories "A items" with very tight control and accurate records, "B items" with less tightly controlled and good records, and "C items" with the simplest controls possible and

minimal records.

The ABC analysis provides a mechanism for identifying items that will have a significant impact on overall inventory cost, while also providing a mechanism for identifying different categories of stock that will require different management and controls.

Breakdown of ABC class are:

- 'A' items – 20% of the items accounts for 70% of the annual consumption value of the items
- 'B' items – 30% of the items accounts for 25% of the annual consumption value of the items
- 'C' items – 50% of the items accounts for 5% of the annual consumption value of the items

Procedure:

i. Items with the highest value is given top priority and soon.

ii. There after cumulative totals of annual value consumption are Expressed as percentage of total value of consumption.

iii. Then these percentage values are divided into three categories. ABC analysis helps in allocating managerial efforts in proportion to importance of various items of inventory.

ABC ANALYSIS

a. Raw material (at closing stock)

Table 1

YEAR	AMOUNT OF RAW MATERIAL
2017	128.35
2018	97.65
2019	-102.25
2020	35.22

b. Stock in process (at closing stock)

Table 2

YEAR	AMOUNT OF STOCK IN PROCESS
2017	160
2018	115.80
2019	76.88
2020	30.25

c. Finished goods (at closing stock)

Table 3

YEAR AMOUNT OF FINISHED GOODS

2017 - 155.67

2018 - 190.04

2019 - 188.55

2020 - 85.90

d. Stores, spares &consumables (at closing stock)

Table 4

YEAR AMOUNT

2017 - 80

2018 - 99.75

2019 - 52.35

2020 - 22.60

e. Raw material consumed

Table 5

YEAR AMOUNT

2017 - 55

2018 - 70.55

2019 - 22.65

2020 - 15.05

ECONOMIC ORDER QUANTITY

EOQ is the order quantity that minimizes the total holding costs and ordering costs in inventory management. It is one of the oldest classical production scheduling models.

EOQ applies only when demand for a product is constant over the year and each new order is delivered in full when inventory reaches zero. There is a fixed cost for each order placed, regardless of the number of units ordered; an order is assumed to contain only 1 unit. There is also a cost for each unit held in storage, commonly known as holding cost, sometimes expressed as a percentage of the purchase cost of the item.

Variables

T = total annual inventory cost

P = purchase unit price, unit production cost

Q = order quantity

Q* = optimal order quantity

A = annual demand quantity

O = fixed cost per order, setup cost (not per unit, typically cost of ordering and shipping and handling. This is not the cost of goods)

C = annual holding cost per unit, also known as carrying cost or storage cost (capital cost, warehouse space, refrigeration, insurance, opportunity cost, etc. usually not related to the unit production cost)

The single-item EOQ formula finds the minimum point of the following cost function:

Total Cost = purchase cost or production cost + ordering cost + holding cost

Where:

Purchase cost: This is the variable cost of goods: purchase unit price × annual demand quantity. This is P × A

Ordering cost: This is the cost of placing orders: each order has a fixed cost K, and we need to order A/Q times per year. This is O × A/Q

Holding cost: the average quantity in stock (between fully replenished and empty) is Q/2, so this cost is C × Q/2

$T= (PA) + O(A/Q) + C(Q/2)$

Economic order quantity is EOQ $=\sqrt{(2AO/C)}$.

RE-ORDER LEVEL

In management accounting, reorder level (or reorder point) is the inventory level at which a company would place a new order or start a new manufacturing run.

Reorder level depends on a company's work-order lead time and its demand during that time and whether the company maintain a safety stock. Work-order lead time is the time the company's suppliers take in manufacturing and delivering the ordered units.

Formula

Reorder level depends on whether a safety stock is maintained.

If there is no safety stock, reorder level can be worked out using the following formula:

Reorder Level = Average Demand × Lead Time

Both demand and lead time must be in the same unit of time i.e. both should in in days or weeks, etc.

If a company maintains a safety stock, reorder level calculation changes are follows:

Reorder Level = Average Demand × Lead Time + Safety Stock

SAFETY STOCK

Safety stock is an additional quantity of an item held in the inventory to reduce the risk that the item will be out of stock. It acts as a buffer stock in case sales are greater than planned and/or the supplier is unable to deliver the additional units at the expected time.The amount of safety stock that an organization chooses to keep on hand can dramatically affect its business. Too much safety stock can result in high holding costs of inventory.

The main goal of safety stocks is to absorb the variability of customer demand. Indeed, production planning is based on a forecast, which is (by definition) different from the real demand. By absorbing these variations, safety stock improves the customer-service level.

JUST IN TIME INVENTORY

The Basic concept is that every firm should keep a minimum level of inventory on hand, relying suppliers to furnish just in time as and when required. JIT helps in emphasizing sufficient level of stock to ensure that production will not be interrupted. Although the large inventories may be had idea due to heavy carrying JIT is a modern approach to inventory management and the goal is essentially to minimize such inventories and there by maximizing turnover.

Average inventory =1/2EOQ+safety level

JIT attacks this equation in two ways.

- By reducing the order cost.
- By reducing the safety stock

The basic philosophy in JIT is that benefits, associated with reducing inventory and delivery time to a bare minimum through adjustment EOQ model, will more than offset the costs associated with the increased possibility of stock – outs

INVENTORY TURNOVER RATIO

This ratio is often a firm's inventory turns over during the course of the year. Because inventories are the least liquid form of assets, a high inventory turnover ratio is generally positive. On the other hand, and usually high ratio compared to the average for the industry could mean a business is losing sales because of inadequate stock on hand.

The formula: Cost of Goods Sold/Average Value of Inventory.

FINDINGS & SUGGESTIONS

1. The EOQ calculated is suggesting that the company should obtain its inventory requirements by placing orders frequently to its suppliers rather than one-time replenishment.

2. Company should take measures for maintenance of proper stores and spares so as to avoid the frequent breakdown of the machinery.

3. There is a need to develop good communication system between various departments like marketing, planning, procurement, and production and distributions functions.

4. The company is having good sales for their products during all the early years of the study.

5. The inventory turnover ratio is on a declining trend year after year in the period of the study.

6. The company should follow Just-in-Time technique; their buy it can do away with

waiting time for a receipt of materials.

7. It indicates inefficiency of management in turning of their inventory into sales.

CONCLUSION

Inventory management has to do with keeping precise records of finished goods that are ready for shipment. This often means posting the production of newly completed goods to the inventory totals as well as subtracting the most recent shipments of finished goods to buyers. When the company has a return policy in place, there is usually a subcategory contained in the finished goods inventory to account for any returned goods that are reclassified or second grade quality.

The ROI of Inventory management will be seen in the forms of increased revenue and profits, positive employee atmosphere, and on overall increase of customer satisfaction. The next step of the present research will be the application of achieved results of demand forecasts, safety stock and reorder points into simulation software in order to achieve more accurate results.

FUTURE WORK

- Detail study about all the material was not possible because of time limit.
- Some of the information was kept confidential by the steel industries department.
- Study was confined only to the selected components in the stores department of steel

company.

- Comparative study may be new research problem for the future work.

REFERENCES

- M. Leseure, Key Concepts in Operations Management, 2010.
- ABC Inventory Analysis using Excel. Posted on October 1st, 2014.
- Demand Forecasting. [Online] Available:

http://www.smetoolkit.org/ smetoolkit/en/content/en/416/Demand-Forecasting

- Demand Forecasting Methods. [Online] Available:

http://www.forecastingmethods.net/DemandForecasting-Methods.html

- www.issacademy.com
- www.wikipedia.com
- www.folkgroup.com
- www.levantar.co.uk
- http://www.pqm-iris.co.id
- www.unschool.com