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A STUDY ON DIFFERENT INVENTORY MANAGEMENT TECHNIQUES IN CONSTRUCTION

Mayank A. Kanani[1], Dr. Neerajkumar D. Sharma[2], Mr. Bhavin K. Kashiyani[3]
PG. Student, S.N. Patel Institute of Technology and Research Centre, Umrakh, Gujarat, India[1]
Prof., S.N. Patel Institute of Technology and Research Centre, Umrakh, Gujarat, India[2]
Asst. Prof., S.N. Patel Institute of Technology and Research Centre, Umrakh, Gujarat, India[3]

Abstract: ***The term inventory refers to the goods or materials used by a firm for the purpose of production and sale. It also includes the items, which are used as supportive materials to facilitate production. Nearly 60% of money is allotted for the inventory in a project. Inventory constitutes one of the important items of current assets, which permits smooth operation of production and sale process of a firm. Inventory management is that aspect of current assets management, which is concerned with maintaining optimum investment in inventory and applying effective control system so as to minimize the total inventory cost. Investment in inventory absorbs a large portion of the working capital of a company and often it represents a large portion of the total assets of a business. By improving return on investment by increasing the rate of inventory turnover, management often wants to ensure economic efficiency. Effective inventory management enables a firm to provide lower costs, rapid response and flexibility for its customers. The study shows the need of inventory control and inventory reduction in the construction. It shows the importance and need of Zero inventory (JIT system) in the industries. In this work ABC, FSN, EOQ and VED selective inventory control techniques are applied for cutting tool inventory modeling in high rise buildings. It was suggested that the conventional inventory model formulated as per their convenience is not very effective.***

Keywords: ***Different IMS Techniques, Inventory Management***

INTRODUCTION

The term 'inventory' refers to the stockpile of production a firm is offering for sale and the components that make up the production. Many understand the word inventory, as a stock of goods, but the generally accepted meaning of the word 'goods' in the accounting language, is the stock of finished goods only. In a manufacturing organization, however, in addition to the stock of finished goods, there will be stock of partly finished goods, raw materials and stores. The collective name of these entire items is 'inventory'. Inventories consist of raw materials, stores, spares, packing materials, coal, petroleum products, works-in-progress and finished products in stock either at the factory or deposits.

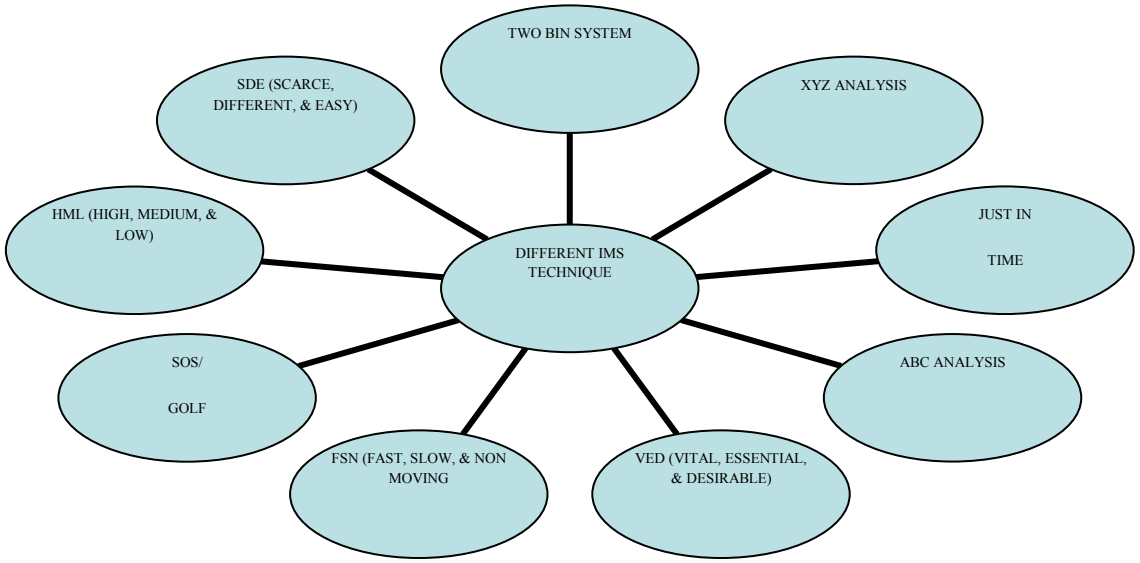
The maintenance of inventory means blocking of funds and so it involves the interest and opportunity cost to the firm. In many countries especially in Japan great emphasis

is placed on inventory management. Efforts are made to minimize the stock of inputs and outputs by proper planning and forecasting of demand of various inputs and producing only that much quantity which can be sold in the market. The inventory cost is not only interest on stocks but also cost of store building for storage, insurance and obsolesce and movement of inputs from place of storage to the factory where the materials have to be finally used to convert them into finished goods.

LITERATURE REVIEW

A number of studies have been carried out to understand inventory management techniques in construction projects. Dr. Satyendra Singh,[V] suggest that JIT is an innovative management philosophy, which has potential to excel an organization in the most competitive and ever changing dynamic environment. It aims at rationalization of the production system, which can be achieved through elimination of wastes. Chien, T.W.,[IV] identified that, there is a variation in the EOQ & no. of unit purchased. It is understood that the company is not following EOQ for purchasing the materials. So, the inventory management is not satisfactory. From calculation of safety stock, we can able to determine how much the company can hold the inventory in reserve stock per annum. Daina R. Dennis, [VI] studied that Better co-ordination among purchase, production, marketing and finance department will help in achieving greater efficiency in inventory management of items. The company can avoid dumping of unnecessary items in the store. Implementation of KANBAN system is appreciable for proper stock maintenance. R. Gupta [VIII] conclude that Globalization and industrialization has led to great advancements in the industries. Inventory which was a necessity for the industries has now being considered as one of the waste. Silver E[X] the study shows that in order to survive in this growing environment industry has to seek for measures for inventory elimination or inventory reduction. The current inventory control practices and procedure need to be reviewed and redesigned while a fully computerized documentation system for posting inventory control data is adopted. The company should employ qualified and adequate personnel involved in stock control activities to curb the shortage and improve their skills of operation in order to meet user needs.

DIFFERENT IMS TECHNIQUES



1. Just in time:

1.1. Why chosen this techniques?

- This technique is very effective to get items in very short time.
- Just in time does what the name suggests; it involves having products arrive as soon as the customer orders them.
- JIT focuses on continuous improvement and can improve a manufacturing organization's return on investment, quality, and efficiency.

1.2. General

Using the just-in-time technique can be risky, especially if it isn't implemented correctly, but if you do it right it can be rewarding. Just in time does what the name suggests; it involves having products arrive as soon as the customer orders them. It can be risky because it is based on customer behavior, which is not always perfectly predictable. Keep in mind when using this technique that it will take a lot of time to research buying habits, seasonal demand, and location-based factors in order for this to be effective.

Just in time (JIT) is a production strategy that strives to improve a business' return on investment by reducing in-process inventory and associated carrying costs. Just in time is a type of operations management approach which originated in Japan in the 1950s. It was adopted by Toyota and other Japanese manufacturing firms, with excellent results: Toyota and other companies that adopted the approach ended up raising productivity (through the elimination of waste) significantly. To meet JIT objectives, the process relies on signals or Kanban between different points, which are involved in the process, which tell production when to make the next part. Kanban are usually 'tickets' but can be simple visual signals, such as the presence or absence of a part on a shelf. Implemented correctly, JIT focuses on continuous improvement and can improve a manufacturing organization's return on investment, quality, and efficiency. To achieve continuous improvement key areas of focus could be flow, employee involvement and quality.

JIT relies on other elements in the inventory chain as well. For instance, its effective application cannot be independent of other key components of a lean manufacturing system or it can "end up with the opposite of the desired result." In recent years manufacturers have continued to try to hone forecasting methods such as applying a trailing 13-week average as a better predictor for JIT planning; however, some research demonstrates that basing JIT on the presumption of stability is inherently flawed.

2. ABC analysis:

2.1. Why chosen this techniques?

In this technique there is classification on the basis of sale and the cost of production so it helps in construction of building to categorized item on the basis of consumption.

2.2. General

This is a popular way to analyze your inventory. Under this method, you classify the inventory into three categories, such as A, B and C. These categories are based upon the inventory value and cost significance. Also, the number of items and values of each category are expressed as a percentage of the total.

Items of high value and small in number are termed as "A"

Items of moderate value and moderate in number are termed as "B"

Items of small in value and large in number are termed as "C"
Remember to manage each category separately: The nice thing about group C is that it can be fairly hands-off, while group A requires special attention. You can use ABC analysis in conjunction with the just-in-time technique to help you get your reorder timing just right.

3. VED analysis:

3.1. Why chosen this techniques?

In this technique there is also categorized items but there is some different in category on the basis of vital, essential, and desirable. This technique is useful in construction industries because there is lot of material which had to tackle on site.

3.2. General

Vital (V): Vital category items are those items without which the production activities or any other activity of the company, would come to a halt, or at least be drastically affected. In a process industry, most spare parts for the bottleneck machine or process will be of vital nature.

Essential (E): A spare part will be considered essential if, due to its non-availability, moderate loss is incurred.

Desirable (D): A spare part will be desirable if the production loss is not very significant due to its non-availability. Most of the parts will fall under this category

The VED analysis helps in focusing the attention of the management on vital items and ensuring their availability by frequent review and reporting.

4. FSN analysis:

4.1. Why chosen this techniques?

This techniques is mainly depend upon the how item is movable on any project so the construction industries had so many items which are movable so we can manage the item easily in construction site.

4.2. General

This analysis is to help control obsolescence and is based on the consumption pattern of the items. The items are analyzed to be classified as Fast-moving (F), Slow-moving (S) and Non-moving (N) items. The Non-moving items (usually not consumed over a period of two years) are of great importance. Scrutiny of non-moving items is to be made to determine whether they could be used or be disposed off. The fast and slow-moving classifications help in arrangement of stock in stores and their distribution and handling methods.

5. XYZ ANALYSIS

5.1 General

In this classification the items are aragned in descending value of inventory holdings. This study is usually undertaken two to three months before the end of the financial year for which materials management performance is evaluated so that corrective action, if required, can be taken well in advance.

- X items are those items whose inventory values are high while Z items are those whose inventory value are low. Y items lie some – in where between.
- For a useful study ABC and XYZ analyses are studied together. Let us take the case of Indian railways who have defined.

- A items are those items whose annual usage value is Rs. 50000 and above.
- B items are those items whose annual usage value is between Rs. 10000 and 50000.
- C items are those items whose annual usage value is Rs. 10000 or below. Indian railway have also fixed ideal inventory levels for A, B and C items as under.

  - A items – less than 3 months annual usage value
  - B items – less than 6 months annual usage value
  - C items – less than 12 months annual usage value
    XYZ limits may be fixed as:
  - X items – those items whose inventory holdings are Rs. 12500 and above.
  - Y items – those items whose inventory holding are between Rs. 5000 and Rs. 12500
  - Z items – those items whose inventory holdings are Rs. 5000 or below.

SUMMARY

In this study there are different 9 types of techniques are available for the inventory management. In which 5 techniques are most suitable for the construction industry. These 5 techniques are recommended on the basis of the literature review study. These 5 techniques of IMS are very effective and easy to adoption in construction industry so that we could achieve our predefined goal easily. Material waste could be reduced by the proper inventory management techniques.

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