

Application of Inventory Management in Construction Industry

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Abstract:- Inventory management is the soul of Materials Management, aims at optimisation of inventory investment to ensure continuity in availability of materials. Around 60% of the firm's working capital is normally tied up in its different forms of inventory. Inventory management is an important constituent of any construction industry therefore the organization need to know the repercussions of proper material management techniques on the success of project execution. Inventories represents aggregate of those items which are either held for sale in the ordinary course of business or are in the process of production for sale or are yet to be utilised in the production of goods & services. in the paper techniques & importance for inventory management is given. Also few studies have been carried out on the inventory management techniques & its importance.

Keywords: *Inventory Management, investment, Techniques, Importance.*

I. INTRODUCTION

Inventories are the physical stocks of items that a manufacturing or service organisation keeps in hand for efficient running of its office or manufacturing activities. Inventory consists of raw materials, component parts, tools, spares, suppliers & finish goods. Inventories cost money in terms of storage space, equipment, personnel insurance, deterioration and above all, the cost of the capital required in financing stocks. Inventory management is crucial function in construction industry for better productivity. Material Management is defined as the process to provide right material at right place at right time in right quantity so as to minimise the cost of the project.

Principal item of inventories are as follows:

1. **Raw material** are those basic materials from which components, parts & product are manufactured by the company.
2. **Finish Parts** are those parts which are manufactured at company's own plant from the basic raw material.
3. **Work in progress** comprises of items or materials in partially completed condition of manufacture. Raw Material become work in process at the end of first operation and remain in that classification.
4. **Finish Goods** are the final products ready to be supplied.

An inventory control system is to be engineered to achieve the basic purpose for which the inventories are created. The fundamental objective of a good inventory control system is to be able to determine What to order, When to order, How

much to order, and How much to carry in stock so as to gain economy in purchasing, storing, manufacturing and selling. These fundamental objective may be amplified into following objectives, to be considered by the analyst, while designing the system.

- Continuity of productive operation
- Effective use of capital.
- Reduction of administrative workload.
- Service to the customers
- Economy in purchasing
- Reduction of risk of loss
- Practical system
- Zero discrepancy between physical stock and book balance

II. LITERATURE STUDY

1 Anuprakash.N. And Nadhini.N . “Study On Stock Management Practices In Construction Companies” , Research Journal of Management Sciences, Vol. 2(4), 7-13, April 2013

The following research paper emphasizes on study of stock management in various companies and also analyzes the data using various inventory analyzation techniques. The main objective of the study is to analyze the inventory control practices adopted by small, medium or large scale companies. Various analysis such as ABC, FSN analysis are used. For various types of companies a questionnaire is used in the methodology. The questionnaire is different for large, medium and low scale companies. Based on the various questions the inventory is analyzed using various statistical approaches and representing the data in tabular format as well as graphical format.

2 Abayomi. T. Onanuga and Adeyemi. A. Adekunle. "Dynamics of Inventory Cost Optimization – A Review of Theory and Evidence" P.M.B 2002, Ago-Iwoye, Nigeria, Vol5, No.22, 2014

The following research paper is about the dynamics of inventory and the cost optimization. The inventory control models as an estimation tool for optimizing inventory cost and management of inventory is discussed in this paper. Traditional methods of managing inventory such as accounting ratios analysis, two bin systems, perpetual inventory system and some others form part of this paper. Inventory is an idle resource which is usable and has value. Then it may be men, materials or any other form of resource. The main role of inventory management is to achieve cost effectiveness through the management of inventory using various statistical techniques according to the authors. Various inventory control models are analyzed and studied using formulae. This paper reviews the inventory control models under deterministic and stochastic models. And some traditional methods of inventory control methods.

3 Dr. G. Brindha, "Inventory Management", International Journal of Innovative Research in Science Engineering and Technology, Vol.3. Issue 1, January 2014

The management and control of inventory is a problem common to all organizations in any sector of the economy. This paper discusses the effective use of resources available to the company and also to avoid the out of stock danger to supply the inventory materials at the right time. Also reduction of risk of avoidance of high obsolescence is discussed. The three main types of inventories are raw materials, work in progress and finished goods. The inventories are differentiated into high and low levels based on their use on site. Also periodic review system is used to monitor the inventory. Various tools of inventory management such as ABC analysis, Economic Order Quantity, FSN, VED, SDE, GOLF analysis are explained using the available data.

2.8 S.Sindhu , Dr.K.Nirmalkumar , V.Krishnamoorthy, "Performance Analysis of Inventory Management System in Construction Industries in India", International Journal for Engineering Research, Vol. 1, Issue 2, July 012

Based on the analysis, the result shows that below points were focused mainly in Construction Industries , Involvement of contractor in material management, need for stock management, managing stock in growth of company, importance to stock comparing other works and maintaining safety in storing. Inventory management system is

considered to perform a key role in an organization, which is responsible to complete the company's project in a specific budget within a certain period of time.

III. TECHNIQUES IN INVENTORY MANAGEMENT

i. ABC Analysis (Always Better Control)

ABC analysis segregates all items into three categories : A, B & C on the basis of their annual usage.

- A items are 5-10% of the total items account for 70-75% of the total money spent on the materials.
- B items are generally 10-15% of the total items & represent 10-15% of the total expenditure on the materials.
- C items are 70-80% of the total items & hardly 5-10% of the total annual expenditure on materials.

ii. FSN Analysis (Fast Moving, Slow Moving & Non Moving)

FSN analysis is based on the consumption figures of the items. The items under this analysis are classified into three group : F (Fast moving), S (Slow moving) N (non-moving).

iii. SDE Analysis (Scarce, Difficult, Easy)

S-D-E analysis classifies the items into three groups called "Scarce", "Difficult" and "Easy". The information so developed is then used to decide purchasing strategies.

- Scarce classification comprises of items which are in short supply, imported or canalised through government agencies.
- Difficult classification includes those items which are available indigenously but are not easy to procure.
- Easy classification covers those items which are readily available. Items produced to commercial standards, items where supply exceeds demand & others which are locally available fall into this group.

iv. HML Analysis (High, Medium, Low)

H-M-L analysis is similar to ABC analysis except for the difference that instead of "usage value", "Price" criterion is used. The items under this analysis are classified into three groups which are called "High", "Medium" and "Low". To classify, the items are listed in the descending order of their unit price.

v. GOLF Analysis

GOLF analysis is like SDE analysis based on the nature of the suppliers which determine quality, lead time, terms of payment, continuity or otherwise of supply and administrative work involved.

- "G" group covers items procured from "Government" suppliers.
- "O" group comprises of items procured from "Non-Government" suppliers.
- "L" group contains items bought from "Local suppliers".
- "F" group contains items which purchased from "Foreign suppliers".

IV. IMPORTANCE OF INVENTORY MANAGEMENT

1. To economise on buying/manufacturing cost
2. To keep pace with changing market conditions
3. To satisfy demand during period of replenishment
4. To take care of contingencies
5. To stabilize Production
6. To prevent loss of sale
7. To satisfy other business constraints

V. CONCLUSION

This is concluded that on the bases of research papers, Materials account for 60-70% of the entire expenditure for construction project. Therefore, it will be possible to reduce overall price of the project with the help of solution given for the project & also avoid the same difficulties for next project

REFERENCES

- [1] Anuprakash N. and Nandhini N. "Study on stock management practices in construction companies" Research journal of management science, vol. 2(4) 7-13, April 2013
- [2] "Dynamics of Inventory Cost Optimization – A Review of Theory and Evidence" P.M.B 2002, Ago-Iwoye, Nigeria, Vol5, No.22, 2014
- [3] Author : Abayomi. T. Onanuga and Adeyemi. A. Adekunle.
- [4] Dr.G.Brindha "Inventory Management", International Journal of Innovative Research in Science Engineering and Technology, Vol.3. Issue 1, January 2014
- [5] Shibamay Mitra, Sujit Kumar Pattanayak & Papiya Bhowmik "Inventory control using ABC and HML", A case study on a manufacturing industry

- [6] Prof. Deepak .P. Patil, "Study of Cost Control on Construction Project", International Journal for Engineering Research, Vol. 2, Issue 5, May 2011