Study of Inventory Management in Cost Control At Rmc Plant

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Abstract- *RMC is plant in which mixture of cement, sand, aggregate and water mixes to form concrete for ready to use this on site as per the clients requirement. RMC Plant needs inventory without obstructing of its activities. It is key between production and distribution process. The cost investment in material inventories is huge amount as compared to other. Therefore, it is very important to have proper control and management of inventories. The main purpose of inventory management is to ensure availability of materials in sufficient quantity when required and also to cost minimization in inventories. So, for the better understanding the nature of inventory management of batching plant, we studying different inventory control techniques for inventory management system in the paper.*

I. INTRODUCTION

Inventory management and its cost control is most important not only for the construction firm but also for the other industries or product oriented services. Cost control in inventories touches almost all aspects of operations. Effective use of cash flow, material management results in success of any construction project.Considering importance of project material management this project includes importance of material management for construction cost optimization with theoretical details of inventory control systems.

Inventory management gives the good planning for required quantities of materials at all stages in the production stages and introducing the techniques..

II. MATERIALS MANAGEMENT

Material management is one function that was neglected till date, but now it has greater importance and attention at every organization. Because due to proper planning and managing of materials give the best result and profit for the organization which increases its value.

Every organization, private or public has productive system. And also through the conversation they set inputs and outputs within enterprise.

Just like that every RMC plant have to arranged their inventories with the planning and proper managements of all the raw materials required. **Functions of Inventory Control**

1. To take care of that stock of materials should be available physically at the exact time of requirement.
2. Manufacturing should be smoother and economical
3. Reduction in material handling cost
4. To take advantage when material purchased in bulk of quantity
5. To earn good return on investment

III. OBJECTIVES

- To study the detail inventory requirements at ready mix concrete plant
- To study the demand vs. supply flow at RMC plant
- To study the inventory management techniques
- To study the inventory cost control techniques
- To study the techniques to minimise risk of loss due to out of date, decline in quality
- To study about the different techniques of inventory control system

IV. COST CONTROL IS

- Optimum utilization of available resources with respect to the production capacity
- Reducing / minimizing excess investment with respect to production capacity

5 Step Program for cost control

Step 1 – Collect the information of plant inventories
Step 2 – Categories the information in ABC / HML etc. techniques
Step 3 – Compare the information for all plants
Step 4 – To analyze how to control the cost under each category viz. – ABC / HML etc.
Step 5 – Conclusion

V. LITERATURE RIVIEW

Result of inventory control model included the optimal order quantity and reordering point. With the fuzzy logic (FL) and neural network artificial (ANN) toolbox of the MATLAB 7.1 package, the Economic Order Quantity model for the material of a batching plant was formulated based on the database of RMC plants. As per the Mehdi Ravanshadnia , Milad Ghanbari in their paper in (2014)

The on-floor cost of the mix is based on the type of concrete and is estimated using one of the techniques of inventory control and which is activity based costing (ABC). Travelling cost , delay due to traffic cost is considered. Al-Araidaha,, A. Momania, N. AlBashabsheha, N. Mandahawib, R. H. Fouad (2012)

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. Study is done by the Anuprakash N. and Nadhini N.(2013)

In construction site contractor should be need to give more importance to the stock management due to which the losses of material is in less quantity . Inventory management system gives the construction project a well management of materials to perform at right time and required quantity at specific period as per this papers author who is S. Sindhu , Dr. K. Nirmalkumar , V. Krishnamoorthy(2014)

In this research author is mainly focuses on to control the cost of a project by implementing the inventory control system in the work. Prof. Dipak P. Patil , Prof. Pankaj P. Bhangale , Swapnil S. Kulkarni (2014) work one case study of construction project of a school building has been considered and the cost required by project with and without material management is analysed. While doing the research the two things are understood that is improper use handling os manpower, cost and time by the contractor. And second one is lack of material management on site.

This research paper emphasizes on Application of Inventory Management in different industries. The main objective of the study 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. Therefore Jyoti Sanjeev Mohopadkar And D. P. Patil (2017) concluded that the Materials account for 60-70% of the entire expenditure for construction project. Therefore, it will 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. This research paper emphasizes on Study of Inventory Management in various companies. The research is based on the questionnaire which is used to detract the attitude of owners, consultants, and contractors towards factors affecting the performance of construction projects by the authors T.Subramani1, V. Bhaskaran Nair2, A.David3, B. Mohamed Ghouse4, N. Siva Kumar5(2017)

VI. TECHNICAL DATA

For the understanding of the actual behavior and the system of RMC plant visited to the three different plants across the pune city and collected some basic but important technical data from the plant is tabulated as under

Technical Detail	RMC 1	RMC 2	RMC 3
Plant Mixer	Twin Shaft(BHS) 1.25 M	Twin Shaft (Imported from Germany) 120M/hr	
Rated capacity of plant	75 m3 /hr	120m3 /hr	
Transit Mixers	Bharat Benz 18 No.	Liebherr 45 No.	5 No.
Recycling plant	Nil	Libherr to recycle water resorces	Nil
Laboratory	In house Lab	In house Lab	In house Lab
Raw Material Storage	Separated bins and silos	Separated bins and silos	Separated binsand silos
Silos Capacity	250*4 = 1000T	250*4 = 1000T	100T
Crusher plant	Own	Dependant on other	own

		plant	
Spare parts	Available (15 L)	Available	-
Supply to	Talegaon, Lonavala, Panvel and PCMC	PUNE	OwnPlant specific

Techniques of inventory control:

Control of inventory is exercised by introducing various measures of inventory control, such as ABC analysis, EOQ techniques, FSN analysis, SDE analysis, HML analysis and GOLF analysis

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.

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

- This 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).

SDE Analysis (Scarce, Difficult, Easy)

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

- Scarce classification comprises of items which are in short supply, imported or canalised through government agencies.
- Difficult group of inventories includes those items which are available indigenously but are not easy to procure.
- Easy classification covers those items which are readily available.

- **HML Analysis (High, Medium, Low)**

The items are classified on the basis of unit cost rather than their usage value.

The item are classified accordingly, as their cost per unit is H-High, M- Medium, L-Low

This type of analysis is useful for keeping control over materials consumptions at departmental level.

In a way this is similar to ABC analysis.

- **High Value Items** – Land, Machineries, Raw Materials, infrastructure etc.
- **Medium Value Items** – Sales & Marketing, Raw Materials, furniture, Daily wedges & salaries, electricity, spare parts, maintenance etc.
- **Low value items** - Stationeries, water supply , printing, photocopy, Pantry items, etc.

Economical Ordering Quantity

Eoconomic Order Quantity models answer the question of how much to order. All variations of the EOQ models specify an optimal order quantity ,which minimizes annual cost associated with maintaining inventories. Therefore this models are required in inventory management .we can find out EOQ value from which the physical quantity can be worked out

Formula for EOQ

Let,
A = Total items consumed per year
P = procurement cost per year
C= annual inventory carrying cost
Q= Economic order quantity
Then,
P = Number of orders*cost per order
= AP/Q
&
Inventory carrying cost = Average value of inventory in a year * inventory carrying cost /year
= ½ QC
Therefore:

$$\text{Total cost} = AP/Q + QC/2$$
$$Q2 = 2AP/C$$
$$Q = \sqrt{2AP/C}$$

Assumptions of EOQ Model:

1. It should be applicable to single product that is continuously reviewed
2. The rate of demand of an item is known, and constant over time period.
3. Every item should be received in single delivery
4. The lead time is known and constant
5. No quantity discounts
6. Ordering cost is constant

VII. CONCLUSION

In this paper studied about the inventory management, and understand about the techniques of inventory management which gives the idea for the further research on the topic in which we are going to work on actual basis and going to apply the techniques on RMC plant inventory management to control the cost of the materials used at the different plant site.

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