

A DESCRIPTIVE STUDY ON INVENTORY CONTROL MANAGEMENT IN CONSTRUCTION INDUSTRIES

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Abstract - Construction materials comprises over half of the aggregate cost of the task. Proficient materials administration assumes a key part in the effective consummation of the task inside evaluated cost and time. Consequently, endeavors ought to be done taken to diminish material cost. In real practice most exertion are done to diminish work cost. The cost, quality and time are essential target of material administration. Stock administration includes capacity, distinguishing proof, recovery, acquirement, and transport and development techniques. Each is permanently connected to wellbeing, profitability and calendar execution. Propel material obtainment or deferred both can influence cost, quality and time. So it is imperative to get material at right cost, at right quality and ideal time. This can be accomplished by utilizing material administration methods, for example, ABC, VED and SDE arrangements. This investigation experiences the way toward dissecting the organization's present gauging model and prescribing a stock control model to enable them to fathom their present issue. The principle target of the investigation is to dissect the stock administration control embraced and the compelling usage of stock at the construction site with the assistance of the SPSS programming.

Key Words: Material Management, Inventory Management, ABC Analysis, VED Analysis, SDE Analysis, Construction Industry

1. INTRODUCTION

The term store alludes to the commodities or resources utilized by a unyielding with the closing stages goal of age group and pact. It likewise incorporates the things, which are utilized as steady materials to encourage generation. Almost 60% of cash is allocated for the stock in an undertaking. Materials Management is identified with arranging, securing, putting away and giving the suitable material of right quality, right amount at correct place in opportune time in order to co-ordinate and calendar the creation movement in an integrative route for a mechanical endeavor. Stock Management is basically the procedure by which an association is provided with the products and enterprises that it needs to accomplish its goals of purchasing, stockpiling and development of materials. Stock administration frameworks are key to how organizations track and control inventories. Being able to quantify stock in an opportune and exact way is basic for having continuous business activities since stock is regularly one of the biggest current resources on an organization's accounting report.

Stock is a rundown for products and materials, or those merchandise and materials themselves, held accessible in stock by a business. Bookkeeping stock is viewed as an advantage. Stock administration is required at various areas inside an office or inside different areas of a supply system to item the customary and arranged course of generation against the arbitrary unsettling influence of coming up short on materials or merchandise. Two inventory management systems exist:

- Perpetual system
- Periodic inventory system.

2. DETERMINATION OF REORDER LEVEL

Reorder level is that level of stock at which the firm should put in a request to renew the stock. The term lead time alludes to the time regularly taken in accepting the conveyance of stock after the request has been set. The re-arrange level can be dictated by the accompanying equation:

$$\text{Re-Order Level} = \text{Average Usage} * \text{Lead Time}$$

The formula for determining the re-order level when safety stock is maintained will be as follows:

$$\text{Re-Order Level} = \text{Lead Time} * \text{Average Usage} + \text{Safety Stock}$$

2.1 TYPES OF INVENTORIES

- Transit inventory
- Buffer inventory
- Anticipation inventory
- Decoupling inventory
- Cycle inventory
- MRO goods inventory

2.2 TECHNIQUES OF INVENTORY MANAGEMENT

- ABC Classification
- HML Classification
- XYZ Classification
- VED Classification
- FSN Classification
- SDF Classification
- GOLF Classification

3. LITERATURE REVIEW

Ashwini R. Patil, et al.,(2013) has analyzed that if the tender is quoted accurately so that non tender will not arise because basic rate of material fluctuates day to day leading to increase in cost. Instead of quantities that item should be quoted as rate only item so it is profitable to contractor & client.

Dipak P. Patil, et al.,(2014) has observed that the financial results in terms of saving in inventory cost resulting in cost optimization, reduction in project completion time with help of detail study, analysis and application of inventory control systems to a case study.

Ehrentz.J.C.F, et al.,(2014) investigate the value of accounting for demand seasonality in inventory control, and their problem is motivated by discussions with retailers who admitted to not talking perceived seasonality patterns into account in their replenishment systems.

Jinpyo Lee, et al.,(2013) has analyzed a periodic review pricing and inventory replenishment problem which encounters stochastic demand under a situation with fixed ordering cost and lost sales. Moreover, they consider a situation in which the random variable for the demand is general.

JoeriPoppe, et al.,(2017) has analyzed the impact of the maintenance policy on the inventory requirements and the corresponding costs for a setting that is realistic at an OEM in the compressed air industry. Their analysis sheds light on the behaviour of the inventory related costs under various maintenance policies.

Kasim.N.B, et al.,(2005) has analyzed that the Materials management is particularly problematic on fast-track projects where design and procurement decisions are made concurrently with construction activities. The paper concludes by presenting a research framework for developing such a system in the future.

Matsebatlela.M.G, et al.,(2015) has analyzed a problem of excessive inventory in a manufacturing company. They developed an inventory management framework (IMF). The result reveals that uncertainty and lot sizing inventory results in excessive inventory and not having a collaborated and integrated supply chain management also results in mismatch of supply and demand.

4. OBJECTIVES

- To study the inventory management system in construction industries based on size of the project, type of the structure, existing management principles
- To find out the optimum level of inventory to be ordered at a point of time

5. SCOPE OF THE PROJECT

This worries the barely recognizable differences between renewal lead time, conveying expenses of stock, resource administration, stock estimating, stock valuation, stock deceivability, future stock value gauging, physical stock, accessible physical space for stock, quality administration, recharging, returns and deficient merchandise and request anticipating and furthermore by recharging or can be characterized as the forgotten load of anything utilized as a part of an association.

6. METHODOLOGY

Research strategy can be characterized as efficient and purposive examination of actualities with a goal deciding the powerful relationship among such certainties and research between at least two wonders from the broad writing study it is much clearer to contribute specifically for the effective consummation of the venture, are impacted by stock administration framework. Specifically, looks into were directed to little degree to investigate about stock administration in development ventures. This cause affect on execution of the stock administration. To yield a coveted execution, it is important to guarantee the task work successfully. Poll study was directed among development experts to distinguish their feeling towards stock administration framework in their association. The got information is dissected to discover the recurrence of reaction for different elements.

7. FACTORS IDENTIFICATION

There are some factors which influence inventory management system. These factors were identified based on literature study.

- To identify the need for stock/inventory
- To analyze the importance of inventory
- To identify the cost allocation for inventory
- To identify the importance of labours inventory
- To analysis the freight charges that affect inventory.

8. RESULTS

The following results shows by using SPSS software and in these data was collected by using questionnaire survey.

8.1 RELIABILITY TEST

Table.1 Reliability test

Cronbach's Alpha	No. of Items
0.826	36

In this learn, the technique utilized for evaluating is Cronbach’s reliability. To establish the internal consistency, Cronbach’s Alpha value was used to access the reliability of the level considering the least value of 0.7 (Cronbach’s 1970, Nunnally 1978) the calculator value was 0.826 which top the threshold boundary.

8.2 FACTORS ANALYSIS TEST

Before the extraction of components, KMO and Bartlett's test must be performed

Table.2 Factors Analysis test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.690
Approx. Chi-Square		910.400
Bartlett's Test of Sphericity	df	435
Sig.		.000

Factor examination was regulated to distinguish the imperative stock administration in development industry and to set up here reasonableness for promote investigation. The KMO assess of examining ampleness was 0.690 confined that they was huge relationship among the variable to concern the factor investigation.

Table.3 Factors affecting inventory construction

Sl. No	Factors affecting Inventory	No. of Variables	Eigen value	Percentage of variance explained	Cumulative percentage of variance explained
1	Inventory premises	6	5.112	17.038	17.038
2	Freight charges	5	1.993	6.644	23.682
3	Material handling equipment	5	1.873	6.244	29.927
4	Transportation	7	1.622	5.406	35.333
5	Material cost	6	1.457	4.856	40.188

The narrated five dimensions of construction professionals were explained to the extent of 40.188 percent. The most important perceived factors affecting inventory is 'Inventory premises' since its respective Eigen value is 5.112, which consists of 5 factors. Since the second and third factors are Freight charges and material handling equipment, their respective Eigen value is 1.993 and 1.873 percent respectively. The variance explained by these factors is 6.644 and 6.244 percent respectively. The next important factor is Transportation and material cost' which consists of 7 and 6 variables respectively. These two factors explained to the extent of 5.406 and 4.856 percent respectively.

9. CONCLUSION

From the present study, factors affecting inventory control management was recognized. Construction professionals should focus on these factors to improve their management skills and give some new techniques to implement and to maintain that in inventory control management in construction industries. The results specify that the most significant factors to affect the inventory control management are inventory premises, freight charges, and materials handling equipment, Transportation and material cost. Construction professionals should diminish these factors by using some new techniques of inventory management control techniques. By using SPSS analysis of these test Reliability test, Factor analysis and Factors exertion test was analyzed.

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