

TO STUDY MATERIAL PROCUREMENT AND INVENTORY MANAGEMENT TECHNIQUES OF CONSTRUCTION SITE.... A Review

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Abstract:- Successful completion of projects requires all resources to be effectively managed and controlled. Materials management is considered as a means to achieve better productivity, then which should be translated into cost reduction. Procurement is the acquisition of goods or services at the best ownership cost, in the right quantity and quality, at the right time and place for the organization. Inventory management deals with the determination of optimal policies and procedures for procurement of commodities. Lack of inventory can lead to stock-outs, causing stoppage of production, but a very high inventory on the other hand can result in increased cost of production due to high cost of carrying inventory. Thus, optimization of inventory should ensure that stocks are neither too low nor too high. In this paper we try to study the methods for material procurement & techniques of Inventory management. The primary data was obtained through the use of a structured questionnaire survey.

Key words: - Material Procurement, Inventory Management, Literature reviews, Procurement methods

1.INTRODUCTION

Various problems are present in the material procurement during every stage of the project life and the reasons of these problems are presented material procurement management system of the contracting organizations. Materials represent a major expense in construction, so minimizing procurement costs improves opportunities for reducing the overall cost of project. Capital may be held up and interest charges incurred on the excess inventory of materials, if the materials are purchased too early. The concept of inventory management has been one of the many analytical aspects of management. It involves optimization of resources available for holding stock of various materials. Lack of inventory can lead to stock-outs, causing stoppage of production, but a very high inventory on the other hand can result in increased cost of production due to high cost of carrying inventory. Materials Management strives to ensure that the material cost component of the total product cost be the least. In order to achieve this, the control is exercised in the following fields: 1. Materials Planning 2. Purchasing 3. Store Keeping 4. Inventory Control 5. Receiving, Inspection and Dispatching 6. Value Analysis, Standardization and Variety Reduction 7. Materials Handling & Traffic. The effective material management system can bring many benefits for a company such as reduction in the overall costs of materials, better handling of materials, Reduction in duplicated orders, Materials will be on site when needed and in the quantities required, Improvements in productivity, Improvements in project schedule, The purpose of procurement is to meet the user's requirement. The user's requirement including any specified level of quality of goods or standards of service, must be tested critically for need, cost effectiveness and affordability under whatever arrangement are in place for financial approval and the separation of functions

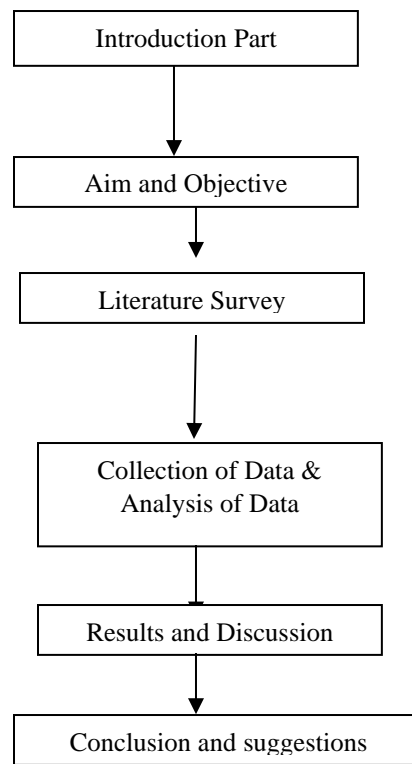
2. OBJECTIVES

Following are the objectives for this paper,

- 1] To Understand importance of material procurement and inventory management in detail for effective material management with help of Literature survey.
- 2] To design the methodology and questioner for collection of data

3. METHODOLOGY

The function of material planning department is to plan for the future procurement of all the required materials as per the production schedule. At the time of material planning, the budget allocated for the materials will also be critically reviewed, for better control, following flow chart is showing the methodology we adopt to achieve the objective of paper and project for further process.



Flowchart No. 01 Flowchart of Work

4. LITERATURE REVIEW

As per Zelalem Molla and Neetu Yadav, Construction work is different from design to design, point to point and conditions, outfit, and accoutrements that are used. These all conditioning have a common process which contains the high plutocrat inflow which is the procurement process. The procurement process is a core part of any design which includes the demand of the contractor or customer to deliver of material at the point. The procurement process involves different situations of help starting from the need of material or outfit to the specific Exertion which involves a group of workers similar as purchase department and store chief to fiscal help and mastermind and this process differs from company to company. In this study a detailed literature is performed to easily study the procurement process and a four different procurement process where studied and mapping approach which is used to

put the process in a pictorial form was used and this fashion is applied to comparatively check the strength and weakness of those four- procurement process. Procurement system in creation undertaking may be executed in special steps and from the have a look at it became made possible to determine out randomly 4 forms of procurement and as a pattern one became decided on to expose the system. This system suggests who's worried in every and each step of the procurement and a mapping method became used to effortlessly become aware of the power and weak point of every procurement system in stepwise.

Procurement system need to be technologically superior so that you can make the system clean dependable and steady the capital investment. In this pandemic generation communicate amongst branch shouldn't be a trouble for a procurement to be effortlessly executed. With superior generation besides the shipping system procurement techniques may be executed online shape which make it clean for a supplier to take part from everywhere and for the customer to accesses new provider and acquire good great of fabric that is appropriate for the undertaking.

As per S. Kamalaeaswari and B. Vedhajanani, The Major problems involved in the material procurement operation systems are listed similar as Lack of planning before starting of the design, False planning, earning material with nonstandard specifications, Selection of non-competent Seller, Late deliveries, Wrong deliveries, Political issues, indecorous track record etc. and these problems have great impact on the time & cost of the project. This study allowed to collect the data of systems, particularly related to procurement, similar as Procurement process, blessings, purchase reports, follow- up reports, claim reports, force reports. and interview of the actors to gain the design information. To avoid detainments substantially the material planning to be carried out on time with the applicable material details material Blessing, material lead time, and material delivery and to be duly tracked. One or combination of Information and Communication Technology helps in effective operation of accoutrements at colorful stages of construction.

The study was carried out through literature study, Questionnaire check and point case study. As per author They factors are mentioned below. Ineffective planning and scheduling in the design redounded in late procurement. Detainments in the blessing of accoutrements from customer ended in late procurement. Detainments in the issue of PO (purchase orders) redounded in late delivery of accoutrements. elision of supereminent time of accoutrements ended in late procurement and delivery.

As per Khaled El- Rayes, effective planning of accoutrements procurement and storehouse on construction spots can lead to significant advancements in construction productivity and design profitability. Being exploration studies concentrate on material procurement and storehouse layout as two separate planning tasks without considering their critical and collective inter dependences. This paper presents the development of a new optimization model for construction logistics planning that's able of contemporaneously integrating and optimizing the critical planning opinions of material procurement and material storehouse on construction spots. The model utilizes inheritable algorithms to minimize construction logistics costs that cover material ordering, backing, stock- eschewal, and layout costs. The model incorporates recently developed algorithms to estimate the impact of implicit material dearth's on-point because of late delivery on design detainments and stock- eschewal costs. An operation illustration is anatomized to demonstrate the capabilities of the construction logistics planning model in contemporaneously optimizing material procurement opinions and storehouse layout plans.

As per Maksum Tanubrata, Ika Gunawan, material inventory management is one a part of the supplying system dedicated to project implementation on material procurable as per the requirements arrange procurable management could be a vital material perform, since the fabric inventory for a construction project involves a substantial investment value. In general, each construction project involves advanced activities, that involves the sharing of activities and operations. Material acquisition activities need sensible coming up with and management considering the massive share of fabric prices to the entire value of the project. So, if less effective material handling can end in loss of your time, value and quality. then this could receive high attention from contractors for the graceful and performance to be achieved within the implementation of construction comes.

According to Rema Sawan, meeting quality and client satisfaction targets is not any longer sufficient for businesses these days. These objectives should be achieved at very cheap potential value. To facilitate this outcome, an organization should essentially take into thought the COQ. hard the COQ isn't an easy task as there has been some dialogue with regards to that prices ought to be enclosed as square measure district , regional locality , vicinity a section of COQ The wide accepted definition of the COQ is that the prices that are related to planning, implementing, running, and maintaining a high quality management system; the value of resources from creating constant improvements; the value from failures in system, product, and service; and also the value from non-value supplementary however essential activities needed to produce a product or service of acceptable quality. the aim of COQ is to link quality improvement to client satisfaction and associate the standard improvement activities with a price. this idea is additionally called the coupling of reduced prices with accrued edges to enhance quality.

As per Harish Nayak and Uppari Naveen Kumar, industry deserves the second largest one in Bharat. The infrastructure growth of a rustic depends on the event of industry since it teems with ample employment potential. Implementation of infrastructure comes ar sometimes failing in every stage and ultimately failure occur, that ends up in value and time overrun. The innovation of latest technology within the construction field isn't being adopted in project implementation. So, the expansion of industry is slow. the \$64000 drawback is construction become troublesome since it'll not complete with within the budget value and time and eventually ends up in project failure as consequence. There ar several reasons for project failure and a few of them ar project specific. Studies have indicated that materials represent regarding hr of the full project value, and management eightieth of the project schedule. thus material includes a dominating role in construction.

As per author Ashwini R. Patil , the total cost of material may be 50% of total cost; so that it is important for contractor to consider that timely availability of material. Material Manager should maintain reports such as material to order between two dates, material assignments, waste control, when to purchase construction material, when material must be on site, and purchase order between two dates. “Material management is defined as the process to provide right material at right place at right time in right quantity so as to minimize the cost of project”. Material management is concerned with the planning, identification, procuring, storage, receiving and distribution of material. The authors highlight the types of construction delays due to which project suffer time and cost overrun. Also give external and internal factors that influence the construction process and outlines the effect of delay in large construction projects.

T. Phani Madhavi , Author suggested that, management system that is required in planning and controlling the quality & quantity of the material, punctual equipment placement, good price and the right quantity as required. materials management can be defined as a process of planning, executing, and controlling the right source of materials with the exact quality, at the right time and place suitable for minimum cost construction process. Capability to coordinate and integrate purchasing, shipping and material control from suppliers is required for material cost control. Material management is a management system that integrates purchasing, shipping and material control from suppliers.

The original site layout was redesigned, then the proper management was bought in and a whole new concept was derived. Proper material management at worksite was identified and prime importance was given to them. She evaluates the procurement process involved in material management and launch a continuous improvement was developed and applied.

5. KEY STEPS FOR PLANNING OF MATERIAL PROCUREMENT

The key steps for planning of material procurement are given as below,

- ✓ Identification of Need
- ✓ Find the vendor around the Site , Vendor selection
- ✓ Submit purchase requisition to office
- ✓ Generate purchase order for
- ✓ Invoice and order
- ✓ Payment to the vendor

The procurement administration layout small print how the procurement system will be managed. It consists of the following information:

- ✓ The kinds of contracts you format to use and any metrics that will be used to measure the contractors' overall performance
- ✓ The deliberate shipping dates for the work or merchandise you are contracting
- ✓ The company's preferred files you will use
- ✓ The wide variety of companies or contractors concerned and how they will be managed
- ✓ How buying may also have an impact on the constraints and assumptions of the venture diagram
- ✓ The coordination of buying lead instances with the improvement of the task time table
- ✓ The identification of prequalified retailers (if known)

6. FACTORS AFFECTING MATERIAL PROCUREMENT

Following are the factors which effect on Material Procurement

- ✓ Owner Contributed Factors
- ✓ Change orders by owner during construction
- ✓ Contractor Contributed Factors
- ✓ Ineffective planning and scheduling of project
- ✓ Consultant Contributed Factors
- ✓ Delay in approving major changes in the scope of work
- ✓ Unclear and inadequate details in drawings
- ✓ Material Contributed Factors
- ✓ Late procurement of materials
- ✓ Delay in material approval process

7. CONCLUSION

The study will help to know about the material procurement and Inventory management. With the assist of this find out about we apprehend fabric stock administration is one a phase of the imparting device devoted to undertaking implementation on cloth procurable as per the necessities organize procurable administration ought to be a crucial fabric perform, given that the cloth stock for a development challenge includes a considerable funding value. In general, every building venture includes superior activities, that entails the sharing of things to do and operations. Procurement in development region is utilized on the groundwork of important element like value time and quality. The find out about offers the thought of which objects will be internally procured and which objects will be externally outsourced. Procurement in development quarter is a fundamental and essential want of building after the planning and designing process.

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