

OPTIMIZING PLANNING AND MANAGEMENT OF CONSTRUCTION MATERIALS

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ABSTRACT Materials management is one of the critical components of the construction industry. As such, organizations really need to understand the effects of proper materials management techniques on the effectiveness of project execution. A properly implemented materials management program can help in achieving the timely flow of materials and equipment to the jobsite, and thus facilitate improved work face planning, increased labor productivity, better schedules, and lower project costs. Materials management is an important function in order to improve productivity in construction projects. It is defined as materials management functions which include planning and material take off, vendor evaluation and selection, purchasing, expenditure, shipping, material receiving, warehousing and inventory, and material distribution.

KEYWORDS: *Material, Management, Construction, Planning, Purchase, Inventory.*

I. INTRODUCTION:

Materials management is a process for planning, executing and controlling field and office activities in construction. The goal of materials management is to insure that construction materials are available at their point of use when needed. The materials management system attempts to insure that the right quality and quantity of materials are appropriately selected, purchased, delivered and handled on site in a timely manner and at a reasonable cost. Materials management is the system for planning and controlling all of the efforts necessary to ensure that the correct quality and quantity of materials are properly specified in a timely manner, are obtained at a reasonable cost and most importantly are available at the point of use when required. Thus Materials management is an important element in project management. Materials represent a major expense in construction, so minimizing procurement costs improves opportunities for reducing the overall project costs. Poor materials management can result in increased costs during construction. Efficient management of materials can result in substantial savings in project costs. If materials are purchased too early, capital may be held up and interest charges incurred on the excess inventory of materials. Materials may deteriorate during storage or get stolen unless special care is taken. Delays and extra expenses may be incurred if materials required for particular activities are unavailable. Ensuring a timely flow of materials is an important concern of material management. For effectively managing and controlling materials, the performance of materials management should be measured. A performance measure calculates the effective working of a function.

II. LITERATURE REVIEW:

1. Study of Material Management techniques on construction project.

The authors Aditya Pandey and Prof. S. Sabihuddin states that Materials management is a critical component of the construction industry. As such, organizations need to understand the effects of proper materials management techniques on the effectiveness of project execution. A properly implemented materials management program can achieve the timely flow of materials and equipment to the jobsite, and thus facilitate improved work face planning, increased labor productivity, better schedules, and lower project costs. Materials management is an important function in order to improve productivity in construction projects. It is defined as materials management functions which include planning and material take off, vendor evaluation and selection, purchasing, expenditure, shipping, material receiving, warehousing and inventory, and material distribution. In this project we have prepared a scheme of material management in the construction industry for building projects also conducting a survey of the industry and determining the various formats for construction material management. As well as talk over

the tracking system of material management in the industry and also discuss the software technology developed for proper management.

2. Construction Material Management On project Site.

The authors Prof. Chetna M. Vyas and Mr. Khyomesh V. Patel Write this to fill a void created by the absence of proper materials management on construction sites. To managing a productive and cost efficient site efficient material management is very essential. Research has shown that construction materials and equipment may constitute more than 70% of the total cost for a typical construction project. Therefore the proper management of this single largest component can improve the productivity and cost efficiency of a project and help ensure its timely completion. One of the major problems in delaying construction projects is poor materials and equipment management. This paper describes the main results of survey carried out in Ahmedabad that investigated the material management of 3 wellknown builders of Ahmedabad.

3. THE IMPACT OF MATERIAL MANAGEMENT ON CONSTRUCTION PROJECT DELIVERY IN MALDIVES.

Ms. Zaha Ahmed states The cost of construction material in a construction project may range from 30 – 80 % of total construction cost making it a prime uncertainty in a construction project. Maldives being a small island nation with a small domestic market; shortage of skilled manpower; difficult inter-island transport and communication and heavy dependence on imported construction material amplified the problem of material management. The main aim of this research paper is to examine the current material management practice and its impact on the delivery of building construction projects in Maldives.

worst delay problems while material management practices that relied on phase-by-phase delivery experienced severe cost overrun. This research was conducted in Maldives on building construction projects and similar research needs to be conducted in other types of construction projects to cross-reference and validate the result more widely.

4. Assessment of materials management on building projects in Ondo State, Nigeria

The author Mr. Bamidele Temitope Arijeloye states The control of materials on construction sites is handled carelessly by planning and purchasing departments, site supervisors and engineers as well as contractor's organization and this have been posing various problems to contractors in realizing reasonable profit margin. The research centered on the assessment of materials management on building projects in Ondo-State Nigeria. This study assessed the current practices of managing materials on building projects, the problems associated with materials management and measures for managing materials in building projects in Ondo state. The study was carried out through the administration of questionnaire to professionals in both consulting and contracting firms and data collected were analyzed using percentile and mean item score. The study reveals that purchasing of materials, material planning method and transportation of materials are the most common practices of materials Management. The most severe problem militating against materials management was lack of proper work planning and scheduling while other problems include inadequate cash flow to contractors due to delayed payments, burglary, theft and vandalism. The study recommends that management should improve their supervision on site, materials should be adequately handled when delivered, care should be given to materials handling process and more awareness should be given to the knowledge of materials management on building projects most especially on construction sites.

5. MATERIAL MANAGEMENT IN CONSTRUCTION- CASE STUDY

The objective of the present study is to understand about all the problems occurring in the company because of improper application of material management. In construction project operation, often there is a project cost variance in terms of the material, equipments, manpower, subcontractor, overhead cost, and general condition. Material is the main component in construction projects. Therefore, if the material management is not properly managed it will create a project cost variance. Project cost can be controlled by taking corrective actions towards the cost variance. Therefore a methodology is used to diagnose and evaluate the procurement process involved in material management and launch a continuous improvement was developed and applied. A thorough study was carried out along with study of cases, surveys and interviews to professionals involved in this area. As a result, a methodology for diagnosis and improvement was proposed and tested in selected projects. The results obtained show that the main problem of procurement is related to schedule delays and lack of specified quality for the project.

III. Importance of Materials Management to Construction Projects.

Efficient management of materials plays a key role in the successful completion of a project. The cost represented by materials fluctuates and may comprise between 20-70% of the total project cost and sometimes more. Sustainable materials management can have numerous benefits. United state environmental protection agency report (2013) informed that these benefits can be group into: Environmental benefits, Economic benefit and Performance benefits

IV. CONCLUSION

After having a view on all the literatures over material management in construction we can conclude that,

- It is clearly important to manage all materials from the design stage to the construction stage. The waste of materials should also be minimized during construction stage in order to avoid loss of profit. Failure in managing site material and inventory will result in cost overrun, delays in project completion and reduce overall project performance. Better coordination among purchase and finance department will help in achieving greater efficiency in Inventory management. Firm, employing proper material management system can have increased their productivity.
- There should be a centralized material management team co-ordination between the site and the organization..
- Proper control, tracking and monitoring of the system is required.

V. ACKNOWLEDGEMENT

The author thankfully acknowledged to Prof.. D. P. Patil, Professor of JSPM's Imperial college of Engineering and Research, Wagholi and Prof. A.N. Bhirud PG Coordinator (Construction & Management) Civil Engineering Depaartment of JSPM's Imperial college of Engineering and Research, Wagholi for their motivation and infrastructural support to carry out this review paper.

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