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An Efficient Material StorageManagement on Construction Site

Prof. Patil S.B.[1], Mr. Mahesh S. Renke[2]
[1] *Professor, Ashokrao Mane Group of Insitutions, vathar tarf, vadgaon,Maharashtra India*
[2]*Student, Ashokrao Mane Group of Insitutions, vathar tarf, vadgaon, Maharashtra India*

Abstract - *Material storage management focuses on putting material into a built-up site to be documented, laid up, and held for a certain amount of time until it is removed out of the storage area and delivered to the job site, where the process is repeated. The introduction of new technologies that are not integrated and lack effective management techniques, as well as unskilled management, have a detrimental impact on the storage management of overloaded sites. The goal of this research is to come up with a cost-effective system for managing materials storage on a crowded site. More than 50 prior research articles addressing the components have alluded to critical investigations. The workflow of storage management, storage management systems, material storage techniques, and responsibilities of responsible parties are the four parts that make up the study's framework. The combination of the parts can help to reinforce or uncover a theory or notion that can be used to the industry's developmental growth and future. The purpose of this initiative is to fill a hole left by the lack of efficient materials management on building sites. Material management is critical to running a productive and cost-effective construction site. According to studies, building materials and equipment may account for up to 70% of the overall cost of a typical construction project. This project describes the main results of survey carried out in Karad that investigated the material management of 3 well known builders of Karad.*

Keywords: *Construction , Storage Material, Management , Planning, Development.*

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I. Introduction

Construction management necessitates integrated systems to guarantee that work is performed on time, on budget, and according to contract requirements. This is due to the fact that material management is crucial from the design stage through the building stage. Material management is often defined as the coordinated removal, procurement, delivery, reception of goods on site, warehousing or storage, and installation of building materials. However, without a well-controlled or coordinated approach or system, all early planning processes would fail. The construction industry is an important component of construction management since all parties involved must understand suitable material management strategies and their efficacy in the completion of building projects. This management entails tactics for ensuring the outflow and entrance of each building material in order to improve the construction area's organisation and regulate the flow of construction materials from the storage area to the construction site. A strong planning and control system also guarantees that the quality and quantity of building materials are precise and delivered on schedule. Material shortages, materials supply delays, non- schedule, material damage and wastage, and a lack of storage space are all difficulties that may be resolved with good management. While the difficulties frequently cited are connected to crowded sites, site plans are reserved in restricted metropolitan regions. Material management that is efficient may save a lot of money on a project. If supplies are acquired too soon, capital may be delayed, and interest expenses on the excess inventory of materials may be incurred. Unless additional precautions are taken, materials may decay or be stolen while being stored. If supplies essential for specific tasks are unavailable, delays and additional costs may be incurred. Material management is concerned with ensuring a timely flow of materials. Materials management performance should be monitored in order to properly manage and regulate materials. A performance metric determines how well a function works. These performance indicators may vary from one system to the next. The measures break down the materials management system into sections and improve its efficiency.

A. Objectives Of Materials Management

- Effective materials planning
- Procurement and receiving

- Storage and inventory control
- Quality assurance
- Increased departmental efficiency

To achieve all of these goals, the material management department must build harmony and strong coordination among all of its personnel, as well as good coordination with the organization's other departments in order to service all of the production centres.

II. LITERATURE REVIEW

The following are the previous research review based on impact of material management on construction project.

A questionnaire survey was used to collect the data, which was completed by 86 procurement professionals. Six factors were discovered to have a significant positive influence on project schedule and cost performance interruption. Improper material delivery is the most important part of material management, followed by insufficient material planning, a lack of knowledge and communication, financial problems in procurement, changes in scope of items, and transportation challenges. The study's findings allow construction experts to focus on a few important factors in order to improve the material management system and, as a result, project schedule and cost performance. [1]

Using data from an ongoing construction productivity study, the effects of material management systems on two steel erection projects are analysed and contrasted. Credit criteria were used to determine daily production. The negative repercussions of a lack of an effective material management programme are outlined, as well as the dates when they occurred. The actual daily productivity is compared to the expected productivity to determine the number of work hours lost on these days. The expense of excellent material management is balanced against the financial impact. The results indicate that material management should be prioritised, with a benefits/cost ratio of 5.7.[2]

The construction sector has long recognised the need to improve its material management operations. According to research, a shortage of or inappropriate management of building materials can result in a decrease in productivity and a waste of money. More focus on properly managing consumable and nonconsumable resources from design to final use in the building process might significantly reduce such unnecessary expenses. Obtaining the necessary materials, both bulk and engineered, is a critical step in any construction job. The importance of the purchase price may be eclipsed by other factors such as the quality of the given goods, the timeliness of shipments, and so on.[3]

III. METHODOLOGY

The literature evaluation conducted in this study is heavily emphasised in terms of effective material management at a congested construction site. The title is chosen after various conversations and consideration of the context of material storage.The study method's methods are shown in Figure 1.

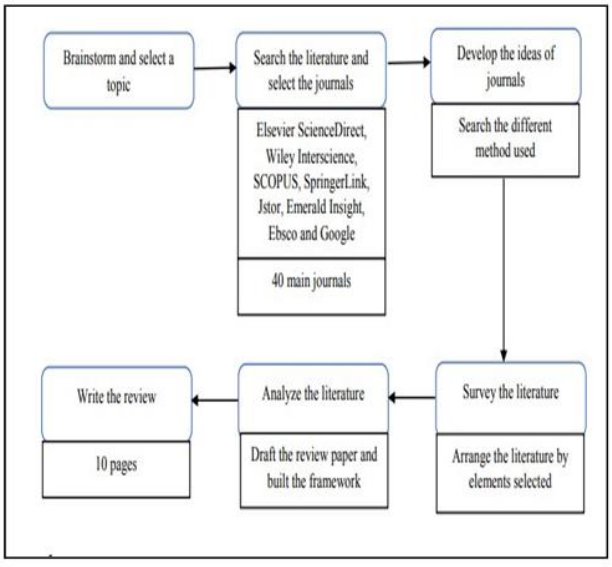

Figure 1. Research process

Steps to develop the idea of previous research in which to make the selection and comparison of systems or concepts can be matched with the goal of this study, and then the process of producing a framework of efficient material storage management at an overcrowded site that is divided into four elements is discussed in detail. In addition, the article has been put up with four different research methods: modelling, theoretical studies, case studies, and literature investigations. In addition, a set of frameworks has been established to explain the aspects present in thematerial collection by way of search and analysis.

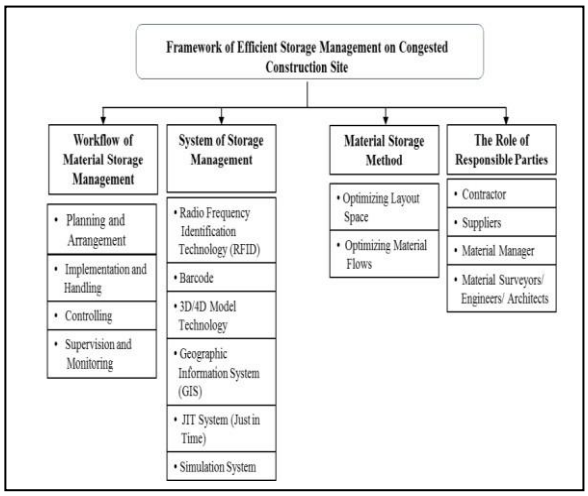

Figure. 2. Framework of efficient storagemanagement

IV. CONCLUSION

Congested sites may have a detrimental influence on material storage, such as limited site space to the source of storage space, low site productivity, compromised construction site security, and an irregular management system. Congestion, on the other hand, is unavoidable in a bustling urban development zone. As a result, these issues must be handled so that a large percentage of material storage management activity is not affected. In addition, the application of systematic management and layout techniques can help to alleviate construction site congestion in congested metropolitan settings. Finally, in the case of a crowded site, the first effective material storage management plan is based on the following characteristics: restricted space, poor site productivity, compromised site security, and irregular systems. Then, using a mix of features from the building materials storage management framework, look at how storage of construction materials might be consolidated if a site is crowded. Several types of systems that have been used in previous construction projects are examples, but the possibility of combining two or three types of systems can result in higher quality. Each system has advantages and disadvantages that have been discussed, and its suitability to the storage of materials storage the buildup as well as the material storage method is closely related. The management workflow, on the other hand, is a roadmap for the responsible party's work process.

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