

# Efficient Techniques of Construction Material Management In Construction Projects: A Review

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**Abstract** - This paper represents the technique of finding optimum cost used in material management for a particular site using EOQ (economic order quantity) analysis. Questionnaire survey is the main source for my study using EOQ analysis, which helps in minimizing the cost of materials. Construction industry is very important aspect in civil engineering which is involved in the planning, execution and evaluation (monitoring) of all types of civil works. There is a need to develop a study concerning cost minimization alternatives based on managing and minimizing construction waste and improving an efficient management. This paper includes review of study of management for good practice to avoiding the extra cost of the materials, which is very essential for construction industry because most of the projects having trouble in the management of construction materials. The problem of shortage of the materials, safety of the materials and delivery of the materials should be sort out so that continuity of the project should be maintained. The EOQ analysis can sort out the materials management problem in construction area and reduce the construction cost by the timely order of the construction materials. The main tools for the collection of data include questionnaires, and site visit to identify the annual requirement of the construction materials while various literature studies were also helpful in review of material management in construction projects.

**Key Words:** Construction materials, Material management, EOQ analysis

## 1. INTRODUCTION

In construction project, construction material is main factor of cost as total cost of installed material may be more than half of the total cost of project. The goal of material management is to ensure that the materials are available at their point of use when needed hence, efficient procurement of material represents a key role in the successful completion of the work. The EOQ analysis is useful in avoiding the wastage in construction material. One of the very important sections that should specify in the construction project management is managing and minimizing wastage of construction materials at construction projects. The successful execution of construction projects within given cost, time and quality, good handling of construction materials on construction site requires systematic planning and controlling of the construction works. Using EOQ analysis we can decrease

the cost of project and hence can save large amount of money in comparison to conventional method of project planning without using EOQ analysis. The normal cost of project without using EOQ analysis is found to be always more than the cost find by EOQ techniques.

The EOQ refers to the order size that will result in the lowest total of ordering and carrying costs for an item of inventory. If a firm place unnecessary orders it will incur unneeded order costs. If a firm places too few order, it must maintain large stocks of goods and will have excessive carrying cost.

## 2. LITERATURE REVIEW

A number of literatures are taken into account to get an overview of the factors that can be best suited for material management in construction projects. Major factors in the management of construction material can find out the efficiency of projects. Effective construction material management process is main key for reducing the cost of construction project works. Some reviews given below on the basis of various research papers helps me to understand the efficient management of construction material in a project.

**Aditya A. Pande, S. Sabihuddin**

“ Study of material management techniques on construction project” this paper shows that construction materials is most important function in construction industry which include planning and material takeoff, vendor evaluation and selection, purchasing, expenditure, shipping, material receiving, warehousing and inventory, and material distribution. The author discusses material management by conducting survey of industry, determining various formats for material management, tracking system of material management in the industry and software technology developed for proper management of construction materials.

**Ashwini R. Patil, Smita V. Pataskar**

“Material Management Techniques on construction project” this paper represents the efficient achievement of construction material indicate a key role in the successful completion of the work. Poor planning & control of material, lack of material when needed, poor identification

of material, rehandling and inadequate storage cause labor productivity losses and overall delays that may indirectly induced total cost of project. To maintain enough stock of raw material in duration of short supply, to protect inventory against finding and overcome investment in inventories and to maintain it in an optimum level an inventory control techniques.

#### **Karrar Raof Kareem, R.K. Pandey**

“Study of management and control of waste construction material in civil construction project” this paper discusses the method for the management and control of waste construction materials. It represents the waste control procedures as a part of particular site management and focusing on transparency principle based on qualitative and quantitative data collection techniques.

#### **Georgekutty C.K, Dr.George Mathew**

“Research methodology for material optimization in construction project” this paper shows the failure in each stage of construction ultimately leads to cost and time overrun by not adopting innovation and new technology. The main problem is construction become difficult since it will not complete with in the budget cost and time and finally leads to project failure as end result. There are many reasons for project failure and some of them are project specific.

#### **A. A. Gulghane, P. V. Khandve**

“Management for construction materials and control of construction waste in construction industry: A Review” author stated that effective construction management of materials is a key to get success to the project. Construction waste is another critical problem in industry of construction. A large and various types of waste in construction with different characteristics are created at all the stages of construction. Construction industries have a big part in contributing environmental problems. The environmental benefits and economic must be gained from minimization of construction waste. This paper presents a review on systematically finding of the management of construction materials and techniques of construction waste management, control of construction waste and existing time of construction management and industry’s construction waste.

### **3. CONCLUSIONS**

The systematic literature review identifies the materials management processes for efficiency of project completion on time and under the budget. It is observed that considerable research have been conducted to investigate separately construction waste management strategies at exact stage of a construction project. Currently, the majority of research effort has been given on material loss in construction activities rather than the

non-value-adding work as an intangible waste of materials. Waste Generation Rate is an effective indicator for measuring waste of construction material and management performance. The EOQ analysis is better technique for avoiding the extra cost of the materials by good management of the ordering construction materials. Thus we can say that the EOQ analysis is most essential to the construction projects because most of the projects have the problem of overrun of the construction cost. The proper management of the construction materials should be well on the construction site and there is no wastage of the material. The EOQ techniques provide right number of order at the right time and the right quantity of the construction materials at the right places.

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