www.ijiarec.com

ISSN:2348-2079

Volume-7 Issue-2

International Journal of Intellectual Advancements and Research in Engineering Computations

A study report on material management in construction industry

R.Ramya[1], K.E.Viswanathan[2]

[1]Pursuing Post Graduation in Construction Engineering and Management,
[2]Assistant Professor in Builders Engineering College, Department of Civil Engineering, Kangayam

ABSTRACT

Material management is a major problem in a construction project for many years. In construction field construction materials consumes 50 to 60 % of overall cost of a project. Nowadays, successful material management of construction has to be based on the innovative techniques. This paper work helps to explore material management techniques used in present days and identify the factors that affects material management. This project also involves applying ABC analysis for a residential building. The material management literatures and some material management techniques are studied. A questionnaire survey is used to identify the current practices in material management. The main recommendation of this research is using material management techniques to determine the required quantities of materials for reducing the time and errors.

Keywords: Construction Materials, Material management, ABC analysis

INTRODUCTION

The effective material management process is acting major role in a construction industry. Material Management is a process of planning, executing and controlling field and office activities in construction organization. Nowadays the successful management for construction materials is based on the updated information. Large companies are mostly used the material management software's like EAM brace inventory management, NEESA material management system, spine BMS. But the small companies are depending the contractors and skilled persons. The main aim of the project is identify the factors of material management and analyzing the residential building by using material management technique in this study the methodology used for measure the difference by S-curve analysis. S-curve analysis is an important tool in project management and it is used to know the variations present between observed planned value and actual value in material management

LITERATURE REVIEW

Title-construction material management on project sites

Author- V.Patel and Chetna M.Vyas

This paper is written to fill a void created by the absence of proper materials management on construction sites. To managing a productive and cost efficient and site efficient material management is very essential. Research has shown that construction materials and equipment may constitute more than 70% of total cost for a typical construction project. One of the major problems in delaying construction project is poor materials and equipment management.

Title - improving effective material management by identifying common factors in building construction project

Author for correspondence:
Pursuing Post Graduation in Construction Engineering and Management,

Author - yohannes tedla and dixit patel

Management in materials has great problems for many years to most firs in construction project. This paper work is based on improving current material management through identifying common factors for building construction. Having the accurate materials and time is an essential aspect for the accomplishment of construction project. This study has revealed that construction materials may constitute more than 55% of overall cost for a distinctive construction project.one of the main difficulties in delaying construction projects is improper materials and equipment management. In this study factors affecting effective material management and inventory management were listed in accordance with the most affecting factors based on literature review.

Title - Material Management in Construction

Author- Madhavi and Mathew

This paper states that all the problems occurring in the company because of improper application of material management. In construction project operation, often there is project cost variance in terms of the material, equipments, manpower, sub-contractor, overhead cost and general condition. Material is the main component in construction projects.

OBJECTIVES

a. Efficient material planning
b. Buying
c. Receiving
d. Storing and inventory control
e. Quality assurance
f. The main aim of material management is right quality of material at right place in right time

METHODOLOGY

Methods of data collection

There are two types of data collection namely primary and secondary data to ensure the values to some extent. **Primary data** these datas are collected by field survey and various literatures. **Secondary data** are the data, which are collected by the questionnaire survey.

The following flowchart indicates methodology adopted for the project

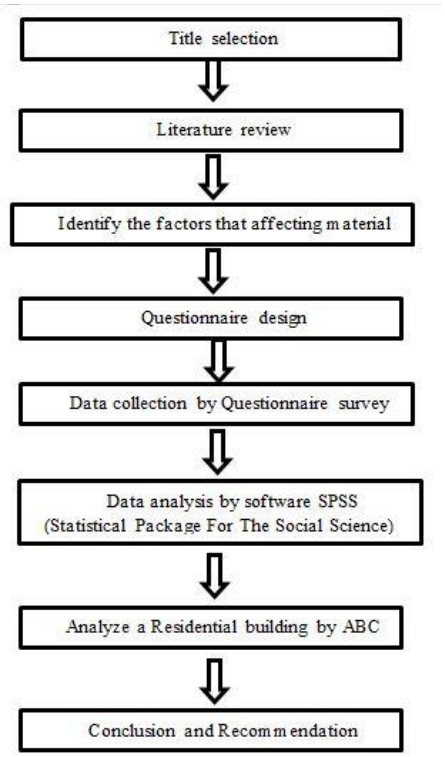

Fig 1. Methodology used

QUESTIONNAIRE SURVEY AND SPSS AN

Alysis

In questionnaire design there are nine questions based on likert scale and twenty one questions based on the conventional type. The questionnaire survey taken from ten companies.

Table 1 Likert scale

STATEMENTS	SU	U	M	S	SS
MARKS	1	2	3	4	5

Where, SU - Strongly Unsatisfied, U - Unsatisfied, M - Moderate, S - Satisfied, SS - Strongly Satisfied.

SPSS Analysis

SPSS is a software package used for the analysis of statistical data. It is an extremely powerful tool for manipulating and deciphering survey data. It is also known as IBM SPSS Statistics.

SPPS result

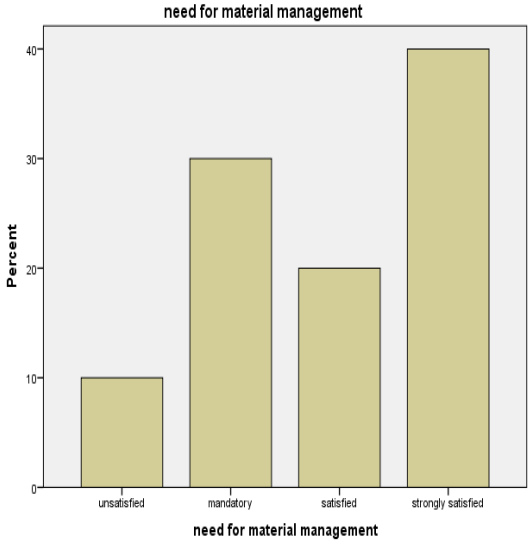

Fig 2 SPSS Chart for Material Management

Table 2 SPSS analysis report

	need for material management	safety stock in planning	material management importance	managing stock in growth	involvement of contractor	safety in storing	accept goods before scheduled date	change order affects quality quantity
Mean	3.9000	3.5000	3.7000	4.0000	3.2000	3.9000	3.7000	3.7000
N	10	10	10	10	10	10	10	10
Std. Deviation	1.10050	1.35401	1.15950	0.94281	1.22927	1.10050	1.15950	0.94868

PROJECT DETAILS

Location : Erode

Company name : City Construction
Project : Residential Building

S.NO	MATERIAL	QTY	UNIT	COST
1	CEMENT	1345	Bags	511236.8
2	SAND	294.42	Tons	471072
3	AGGREGATE	588.45	Tons	323867.5
4	BRICK	15500	Nos	131750

ABC Analysis

ABC analysis classifies the materials based on their consumption during a particular time period depending upon the company to company A B & C items can be as under

A – Approx. 5% to 10% of the Items accounting for 50% to 80% of the consumption value.

B – Approx. 10 % to 30% of the Items accounting for 10% to 30% of the consumption value.

C – Approx. 50% to 85% of the Items accounting for 5% to 15% of the consumption value.

Percentage of Material = (each material cost/ total cost of material)*100

From the collected data,

Percentage of Cement = 48%
Percentage of Sand = 33%
Percentage of C.A = 10%
Percentage of Bricks = 8%

A Class Material is Cement
B Class Material is Sand
C Class Material is C.A and Bricks

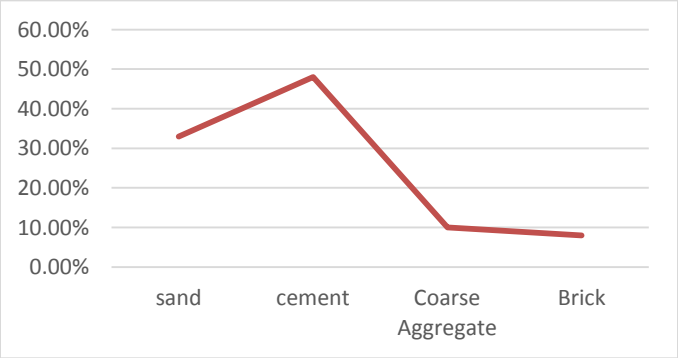

Fig 3 ABC analysis graph

By Implementation of ABC analysis, we have calculated the materials cost and quantity of materials and found the total cost of materials.

CONCLUSION

This project work was very helpful to understanding about engineering works, costing, scheduling, construction activities, material management importance, process, software's, such as EAM brace inventory Management, Neesa Material management system, needs of material management and difficulties of material management handling in site. This project helps to enhancing my management skills. Overall wide knowledge about implementation of project management skills through materials, inventory. I prepare questionnaire for this project to identify the problems in construction industries and it was very helpful to identify the problems and find the solution.

RECOMMENDATION

Large companies are adopting various software's to reduce their cost and time .The small level companies are also recommended to using the inventory techniques to reduce their time and errors.

To avoid poor material selection and incorrect material type to appointing the skilled persons for ordering the materials.

REFERENCES

[1]. Chetna M.Vyas & Khyomes V.Patel" Construction Materials management on project sites" National Conference on Recent Trends in Engineering & Technology 7(5), 2011.

[2]. Yohannes Tedla, and Aye Dixit Patel, "Improving Effective Material Management by Identifying Common Factors in Building Construction Project", International Research Journal of Engineering and Technology, 5(1), e-ISSN :2395-0056

[3]. Priyadarshini N.Mane, A.K Gupta & D.B.Desi, " Onsite Material Management for Construction Projects" , Imperial Journal of Interdisciplinary Research (IJIR) 3(2), 2017, ISSN 2454 - 1362., May 2015

[4]. Vikram Kulkarni, Rohit Sharma, Mohit Hote, "Factors Affecting Effective Material Management in Construction site", International Research Journal of Engineering and Technology. 4(1), 2017, ISSN (2395-0056).

[5]. Ezhilmathi, T. Shanmugapriya, "Study on Material Management" International Research Journal of Engineering Technology, 3(11).

[6]. Aditya A Pande, S.Sahibbudin " Study on Material Management Techniques on Construction Project" International journal for Informative & futuristic Research, ISSN 2347-1697, 2(9), 2015.

[7]. Ashwini R. Patil, Smita V. Pataskar, Analyzing Material Management Techniques on Construction Project. International Journal of Engineering and Innovative Technology (IJEIT) 3(4), 2013, 96-100.

[8]. Sayali shet and Prof. Raju Narwade, An Empirical Case Study of Material Management in Construction of Industrial Building by using Various Techniques. International Journal of Civil Engineering and Technology, 7(5), 2016, 393 –400.

[9]. SayaliShet, RajuNarwade. Use of Various Techniques of Material Management for Construction of Industrial Building. International Journal of Innovative Research in Science, Engineering and Technology, 6(2), 2017, 2550- 2555.