



Construction Safety: An Integral Part of Project Management

KEYWORDS

construction procedures, regulations, policies, and accident, prevention methods related to the construction projects in India, safety performance in construction projects.

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ABSTRACT

In India the construction industry is the second largest employer next to agriculture and about 31 million people are employed in construction sector. Indian construction industry is labour intensive comprising of semi-skilled and unskilled workers. The measurement and evaluation of an organization's performance on health and safety conditions at work mainly aims at the provision of information about the current situation and the progress of the strategies, processes and activities that are adopted by an organization with the view to keep H&S hazards under control. The construction industry needs a new paradigm for measuring safety performance on construction sites that is a proactive approach rather than just depending on the reactive data. The proactive approach is able to provide essential feedback on performance before incidents occur. This paper presents proactive safety measures to eliminate unsafe actions/conditions which contribute towards accidents and injuries by conducting safety sampling survey and overall safety performance was evaluated and provide methods and suggestions to improve the safety performance in construction projects in the India.

INTRODUCTION

Management and planning is one way to avoid unplanned events. Since accidents are unplanned events, an effective safety management can help avoid job injuries. Safety management must be through, and it must be applicable to all aspects of the job, from the estimating phase of the project until the last worker has left the premise at the completion of the project. All parties to a construction project must be included in some way in the safety program every party is responsible. The construction industry continues to be one of the most physically demanding and dangerous industries in the India.

The Construction activities in developing countries, such as Pakistan and India, is more labour intensive than in the developed areas of the globe, involving 2.5-10 times as many workers per activity. Typically workers tend to be unskilled and migrate in a group, with or without their families, throughout the country in search of employment. In fact, they are usually divided into various factions. Communication problems related to difference in language, relation and culture tend to inhibit safety on the work site. The major injuries faced by contracting firms in India on their projects site, in descending order of occurrence, were given as follows:

- ✓ Fall injuries.
- ✓ Struck by wastage and raw materials.
- ✓ Heat stroke.
- ✓ Head injuries.
- ✓ Eye injuries.

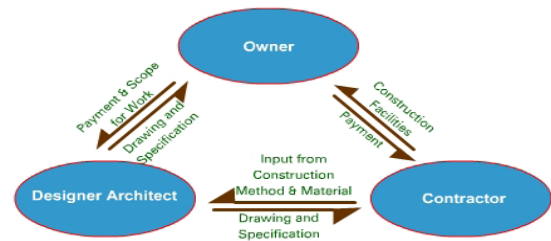
The improvement of safety, health and working conditions depends ultimately upon people working together, whether governments, employers or workers. So safety management means applying safety measures before accidents happen. Effective safety management has three main objectives:

- ✓ to make the environment safe;
- ✓ to make the job safe,
- ✓ to make workers safety council.

Following main parties are involved in the construction

- a) Owner
- b) Designer
- c) Contractor

The relation between these are shown in the figure



OBJECTIVES

The objectives of the study are:

- ✓ To realize the real safety problems and danger of injuries that occurs in in construction industry.
- ✓ To investigate safety procedure regulations, policies, and accident prevention methods related to the construction projects in India.
- ✓ To provide methods and suggestions to improve the safety performance in construction projects in the India.

METHODS OF CONDUCTING DESIGN

Respondents

Three types of respondents are considered in this study. The first respondents are the contractors in India, they executed so many projects during the last five years. The second type of respondents is consultants and executed so many construction projects during the last five years. The third type of respondents are owners, the samples are selected randomly from each type of construction professionals' contractors, consultants and owners, also the experience of the respondents more than ten years, and number of projects executed in the last five years more than thirty projects with the different of size of those projects.

Questionnaire Design

Questionnaire is used to collect the data. The designed questionnaire mainly depended on the questionnaire of Ahmed. Modifications and new questions are then added to suit the local construction industry in India.

Data Analysis

To the quantitative and qualitative analysis in this study use

Microsoft Excel spreadsheet computer program for most of the questions in Part (B) which is to realize the real safety problems and danger of injuries that occur in india. And (D) to provide methods and suggestions to improve the safety performance in construction projects in india. A few open questions in part (B) and (D), however, analyzed separately. Score used to analyze part(C) which is investigate safety procedures, regulations, policies and accident prevention method related to the construction industry in india, and part of question (D) table where in this part Likert Scale questions are used. The main principle used in the analysis is the score and the percentage weight to obtain the perfect solution for the respondents. In the part (D) one question use Ranking is followed by comparison of score values for all the three parties of the respondents.

Questionnaire Content

The questionnaire included three types of questions. These types are:

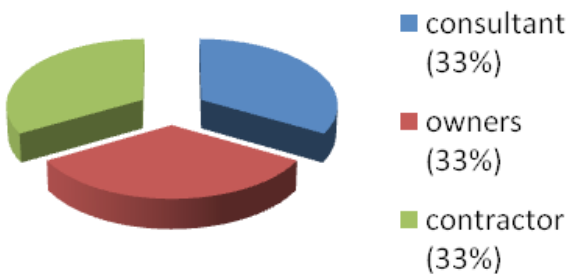
- ✓ Open-close questions, which are use in questions number 13, 15, 18, 19, 20, 21, 23, 24,26, and 28 (See appendix I).
- ✓ Likert scale questions, which are used in part (C) of the questionnaire and a few question in part (D).
- ✓ Rating scale questions, which are used in question number 25 in part (D) of the questionnaire.

The aim of the questionnaire used in this study is to realize the real safety problems and danger of injuries that occur in construction projects in india, and to investigate safety procedures, regulations, policies, and accident prevention methods related to the construction projects in india there; and to provide methods and suggestion to improve the safety performance in construction projects in india.

The survey results of the four parts. (A) Firstly Response among the officials the second Part (B) of the objectives to realize the real safety problems and danger that occur in tamil Nadu. The third part (C) to investigate safety procedures, regulations, policies, and accident prevention methods related to the construction projects in Tamil Nadu. The fourth part (D) to provide methods and suggestions to improve the safety performance in construction projects in tamil Nadu.

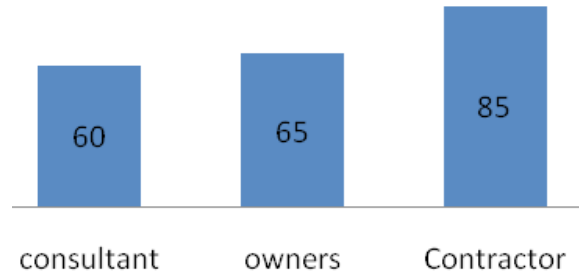
Part A : Response among the officials Participated in the questionnaire are three types of the respondents in the Tamil nadu

Owners, contractors, and consultants. 40 questionnaires have been distributed and the response rate is 75%. 33 %(10) of the owners, and the 33 %(10) of contractors, and the 33 %(10) of the consultants show in fig. response rate among respondents. All the Type of the respondents executed many projects at the last five years.

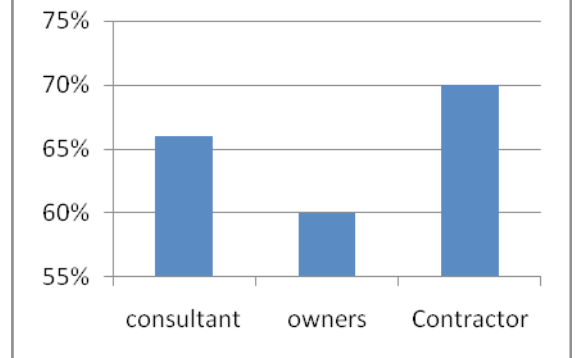


Part (B) of the objectives to realize the real safety problems and danger that occur in tamil Nadu

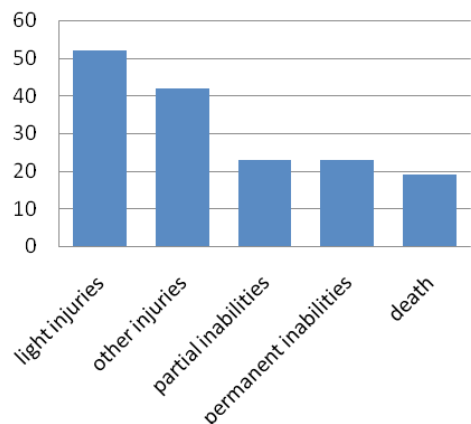
Accident Rates in construction project among three parties



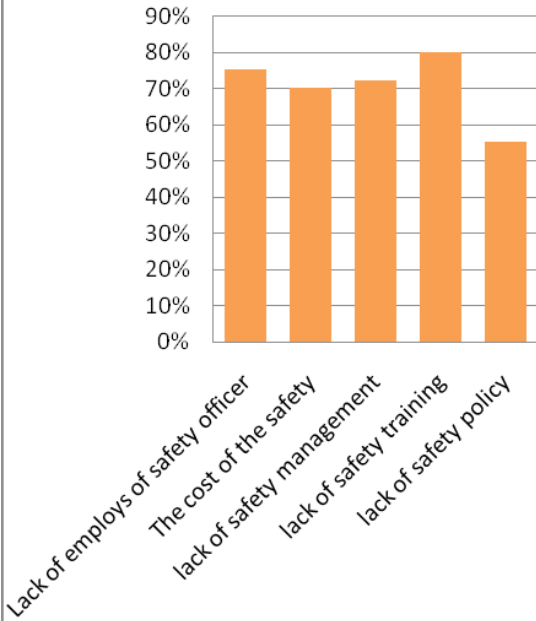
Responent who did not record the Accident



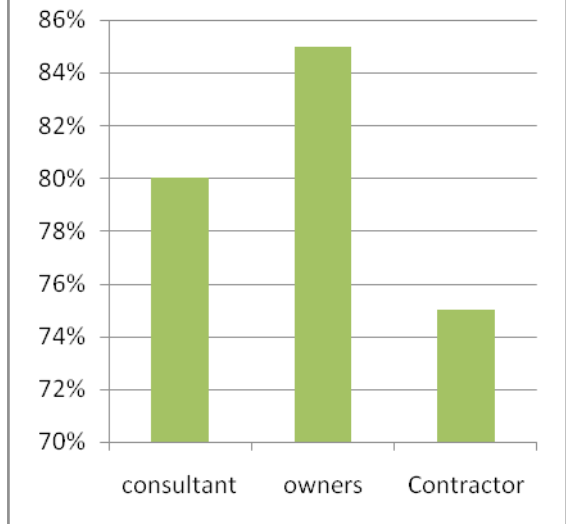
Types of injuries among the Responents



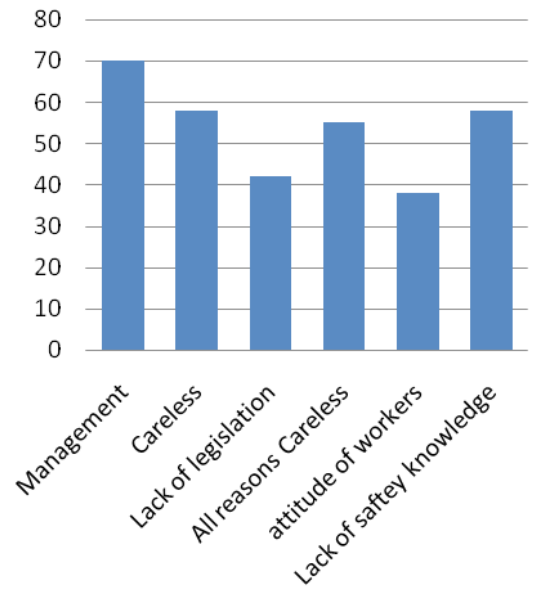
The shortage of Management



There is no safety inspection in construction sites



Reason of high accident rates in construction projects



part (C) to investigate safety procedures, regulations, policies, and accident prevention methods

S.No.	Content	Disagree	Neutral	Agree
1	Implementation of safety regulations helps in reducing accidents.			100%
2	Responsibility for safety and health in only confined to construction work on the site.		20%	80%
3	The main cause of the accidents on the site is the workers lack for safety knowledge			100%
4	Consultants carry both a moral responsibility and a duty of care of building / demolition workers and public in general	30%	25%	45%
5	You have a good knowledge of the current regulations regarding construction site.	50%		50%

CONCLUSION AND RECOMMENDATIONS

CONCLUSION:

The results in the Tamil nadu highlighted the bad safety situation where most of the respondents in the survey had accidents in their construction projects during the last five years. Accidents rate mentioned by the contractors (80%) was higher than with the other respondents i.e., the consultants (60%) and owners (70%). This was attributed to the fact that the contractors execute projects with size and values more than the owners and consultants.

Management carelessness, lack of safety officer and safety culture were the main reasons contributed to the increase of rate of accidents in the construction sites. Other than the contractors' responsibility for causing accidents in the construction sites, the absence of government follow up on the construction projects and the failure to improving the safety performance on the construction sites were also responsible for the high number of accidents. Regarding the cost of the construction safety, the majority of the respondents agreed that the cost of safety less than 3 % during the last five years.

There were many potential hazards in the sites which can lead to many injuries, or disease among the workers on the construction sites. On the existing safety procedures, regulations, policies, and accidents prevention methods related to the construction projects; there was a consensus among the respondents that implementation of safety regulation helps in reducing accidents. Construction professionals should play more active roles in sustaining construction safety and in improving safety culture for construction workers. There was also a consensus between the respondents that responsibility for safety and health was only confined to construction work on site

RECOMMENDATION:

The Government

- ✓ The government should establish the Department of Occupational Health and Safety Administration (OHSA) with the strong terms of punishment for those who make safety violation.
- ✓ The government should follow up the safety performance in the construction sites by visiting the construction site and evaluating the safety performance during the construction project.
- ✓ The government should provide safety courses on how to improve safety performance in the construction sites for officials of safety in the construction projects, which is to be held annually.

The Insurance companies

- ✓ The insurance companies should visit construction sites to monitor the safety performance in the construction sites.

The Consultants

- ✓ The consultants should visit the construction sites to make sure all the tools used in the construction site are safe.
- ✓ The consultants should determine the factors that can cause accidents in the construction site such as the bad use of scaffolding and stairs and minimize them during the construction project

The Owners

- ✓ The owners should control and mentor the contractors and consultants by giving safety training to workers, promoting safety culture in the construction site and by making sure that the consultants inspect the safety of the tools used in the construction sites.

The Contractors

- ✓ The contractors should train the workers, promote the safety culture for workers and educate them on how to avoid the risk and use the equipment properly in the construction site.
- ✓ The contractors should prepare the regular safety meeting during the work in the construction site.
- ✓ The contractor should make sure that all the workers wear the personal protection equipment and punish the workers who make safety violation.

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