

ACCIDENT ON CONSTRUCTION SITE: IDENTIFICATION & MITIGATION: A LITERATURE SURVEY

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Abstract: In this paper Construction Industry in India and other developing countries faces a wide range of challenges, one of which is the frequent occurrence of accidents in the work areas. This Paper presents results of a research that concentrated on investigating causes of accidents on construction projects in India. During the last few years several accidents have occurred on various construction projects all over the country, of which have been fatal. The main focus of studying this topic is to identify the major reasons which are responsible for occurring construction site accident & their mitigate measures. Method which will help to management to understand the problem. The main purpose for prepare this study is to identify the factor affecting for construction site accident, also guideline for avoiding them.

Keywords: Accident, Construction Safety, Prevention, Investigations Theories Causation,

INTRODUCTION

Construction work is hazardous work. The National Safety Council reports that in 1996 alone, 1,000 construction workers lost their lives at work and another 350,000 received disabling injuries. Construction accounted for only 5% of the workforce but claimed a disproportionate 20% of all occupational fatalities and 9% of all disabling occupational injuries.

In India, construction industry holds the second position next to agriculture industry. The annual turnover of the construction industry in India is about 4000 Billion Rupees, which is more than 6% of the National GDP employing a large work force the number of fatalities occurring from construction work in the industry is quite disturbing and fall of person from height and through openings are the major causes for serious accidents. But the accidents occurring in India is very high compared to the foreign countries.

The prevention of construction accidents usually entails predicting future accidents and their nature under given circumstances. The making of such predictions is based on knowledge about past accidents. The major causes of accidents in the construction industry are related to the unique nature of the industry, human behaviour, difficult work-site conditions, and poor safety management which result in unsafe work methods and procedures.

Due to the fact that accident rates in construction are high when compared to other industries, the construction and projects managers need to be fully prepared to deal with accidents when they occur, undertaking proper investigations and reporting procedures afterwards. Accident statistics represent not only terrible human tragedies but also substantial economic costs. This is because accidents cause damage to plant equipment and the loss of productive work time until the normal site working rhythm and morale are restored. Accidents can also cause work disruption and reduce the work rate.

The major causes of accidents are related to the unique nature of the industry, human behaviour, difficult work site conditions, and poor safety management, which result in unsafe work methods, equipment and procedures. Emphasis in both developing and developed countries needs to be placed on training and the utilization of comprehensive safety programs.

LITERATURE SURVEY

1. Major Theories Of Construction Accident Causation Models: A Literature Review. Seyyed Shahab Hosseinian, Zahra Jabbarani Torghabeh, Johor Bahru.

The majority of accidents happen as result of unsafe acts and unsafe conditions. Since all hazards in construction workplaces are not always possible to be identified and eliminated therefore effective accident investigation programs are essential for collecting critical data. Construction accidents can be prevented just by identifying the root causes of accidents, which is possible by accident investigation techniques Construction accidents can be prevented just by identifying the root causes of accidents, which is possible by accident investigation techniques.

Theories and models of construction accidents causation are developed on the basis of describing how construction accidents happen. These theories and models illustrate how threats are translated into an injury or loss. Accidents and incidents in construction workplaces are unplanned and unwanted occurrences involving movement of persons, objects or materials which may result in injury, damage or loss to property or people. Therefore unsafe acts and unsafe conditions are the immediate (direct) causes of.

The objective of this paper is to introduce an accident root causes tracing model (ARCTM). The goal is to complement existing construction accident investigation techniques with contemporary accident causation and human error theories. This would provide management with a simple and easy to use template for systematically and rapidly determining why an accident to occurred o that more effective measures for preventing accident reoccurrence a be implemented.

2. An Effective Total Construction Safety Management In India

S. Chockalingam and T. Sornakumar Thiagarajar(2011)

In this paper, several construction safety techniques were used for the safety of major construction organizations across India. These techniques are very much useful for the safety construction. Moreover, Total Construction Safety Management (TCSM) is proposed for the effective construction safety in india. Safety climate is used for the evaluation of the TCSM. Construction safety in the literature review mainly falls into four categories. Accident statistics and causes of construction injuries or fatalities. 1. on site accident prevention methods, 2.The role of stakeholders, apart from contractors, 3.in preventing

accidents.4. Institutional aspects of construction safety. As a temporary measure, Department for International Development (DFID) may consider developing a construction safety policy for its projects. Construction Safety will not be improved unless there is a demand or incentive provided to the contractors. As workers often feel that their jobs are too insecure to make large demands on their employers, the initiative for improved safety must come from the client. As DFID will 'hold the purse strings' on many projects it will be in a suitable position to encourage or demand improved safety procedures on these projects, in line with its safety policy or guidelines.

The proposed TCSM acts as a catalyst for maintaining a safe project, contractor top management should formulate strategies and develop policies that nurture a safe culture. There are several techniques adopted for the safety construction in India. 1. Safety organization, 2. Safety related deficiency management, 3. Job hazard analysis (JHA), 4. Safety training, 5 the task demand assessment (TDA)

3. Identifying Root Causes Of construction Accidents.

Tariq S. Abdelhamid,' and John G. Everett (2000)

The objective of this paper is to introduce an accident root causes tracing model (ARCTM). A review of the literature on construction safety reveals that much research effort has been directed at examining accident records to categorize the most common types of accidents that occur to as specific trade, and how these accidents happen.

Despite the importance of such study findings to guide accident prevention plans, it is our assertion that construction accident investigation stop at a premature eleven or are is sing important steps to identify the root causes of accidents. As summarized by Brown (1995), "Accident reporting is a means to an end, not an end in itself." In other words, the answers that accident investigations provide for the "what" and "how" questions, should be used to determine the factors that contributed to the accident causation. Brown (1995) argued convincingly that accident in accident causation and human error, which would result in a better understanding of the relation between he "antecedent t human behavior" and the accident at a level enabling the root causes of the accident to be determined. Consequently prevention efforts could be directed at the root cause of accident not at symptoms, leading to more effective accident prevention.

4. Improving material management practices on fast-track construction project. Suggested Practices for Preventing Construction Accident Worker Fall.

By Supriya Ghule (2008)

Comparison with other industrial sectors, the construction industry has a disproportionately high percentage of injuries and fatalities, accounting for almost 20% of the fatalities of all industrial workers but employing only 6-8% of the industrial work force. It is important to acknowledge the fact that the construction industry accounts for nearly 15 % of the workers' compensation injuries. Of all the injuries and deaths occurring on construction sites, falls are the single largest cause, accounting for almost 38% of the construction worker deaths.

The OSHA regulations were promulgated to reduce the number of work site injuries and fatalities occurring as a result of falls. A significant portion of the regulations are focused on fall protection. Despite the OSHA regulations, there are an unusually high number of injuries which indicates that there is still a need to make further improvements to prevent construction injuries. The purpose of this study was to explore the best methods of fall prevention for different types of fall hazards commonly encountered on the construction sites.

Accidents happen on work sites as a result of negligence on the part of workers, hazards associated with the work, unsafe work-conditions, supervisory shortcomings, managerial mistakes and other factors. Even if construction workers are specialized in performing specific activities, they are exposed to more hazards than workers associated with other industrial trades.

While the safety record of the US Construction Industry has been far-surpassed by improvements made through the efforts of various large construction companies through their safety initiatives and injury free programs and other specific programs, the threat of falls is a continuing concern to the industry. The aim of this study was to devise means by which falls could be reduced through the implementation of specific techniques. This study examined how fall safety can be improved in the construction industry.

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5. Analysing construction site accidents in kuwait

Hashem m. al-tabtabai 2002

This paper present a research study that seeks an understanding of causes of accident in the construction industry in kuwait, and focuses on the role of management, human and behavioral and project's nature in construction accidents. The paper present an analysis of accident in Kuwait long with accident causation and injuries based on accident report extracted from government agenesis.

The factor were measured and ranked under each group by the 'Relative importance index' techniques. The conclusion of this paper suggest that accident are attributed mainly to management practices rather than human or behavioral issues. Recommendation is included in the paper to suggest a better application of policy and management action and procedures to improve the safety at construction sites and projects.

The objectives of this research are 1.to obtains n overview of construction accident and serious injuries in Kuwait, 2.to analyzes causes of construction using numerical ranking techniques, and 3.to studies the effect of project related and safety factors, management factors and human factors on accident in construction site in Kuwait.

6. Application of Domino Theory to Justify and Prevent Accident Occurrence in Construction Sites.

Pejman Ghasemi Poor Sabet¹, Hamid Aadal, Mir Hadi Moazen jamshidi, Kiyanoosh Golchin Rad, 2013

Since the construction activities involve most complex processes and the most intensive administrative atmosphere as well, the accident events come raised in different situations and due to various causations. Most of the construction accidents originate from human errors and operation sources such as equipments and facilities in work processes. Most accidents lead to the loss of life, injuries and loss of properties. Quality, time and money are the vital and the main factors to be controlled with regard to a project's productivity. The focus of attention concerning safety as the issues affecting the main factors has been as a significant function that most problem and operational issues arise on projects.

The aims of this paper are firstly, to describe the shortcomings of construction processes contributing hazardous situations. secondly, highlighting, the ways to apply Domino theory, and thirdly, to define how to establish a remedy model to prevent accidents in construction projects based on domino theory in simple statements.

Conclusion of this paper is common type of accident in Kuwait is tool accident, fall from ladder and fall from scaffolding. Also the management worker and human related factor have no large effect.

CONCLUSION

After reviewing above paper we can concluded that.

1. The study of literature review shows the unsafe acts and unsafe conditions are the immediate (direct) causes of.
2. From the literature review it is understood that this area require further research to find some feasible solutions to prevent the site accident.
3. This work is an attempt to find a method to control the construction site accident in construction projects.
4. It is also determine that so many factor are responsible for occurring construction site accident evaluate that factor and find out the most effective factor which are responsible for it.
5. The field study is conducted in a very precise manner and confined area. A questionnaire survey is conducted in step by step and strictly observing on the principles adopted for a successful questionnaire survey.
6. The response of the respondents received is analyzed by using the appropriate statistical tool. The results obtained were discussed in detail and the analysis observations are arrived.
7. The study, leads to Working towards a goal of having zero accident work places will take a stronger commitment and concerted effort on behalf of owners, designers and contractors alike.
8. To the study of literature preventing measure of the construction site accident is found.
9. From the literature study, the techniques and method give the solution of the construction site safety.
10. This give light to the fact that pre-planning and material procurement are equally important in the total project cost. As an after effect of the project delay cost and time overrun will be the end result of every project.
11. This research work is an attempt to find a method/technique to control the construction site accident of construction projects.
12. An appropriate methodology has been designed and subsequently by the most suitable research instrument has been identified and the research is administered with implications for future researches and predations

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