Investigation on the Implementation of Safety Management in Construction Sector of Baroda District

Arun kumar L Patel[1], Anuja Tidke[2], Mohammed Shakil S. Malek[3]

Department of Civil Engineering

Parul Institute of Technology, Parul University, Limda, India[1,2].

FD (Mubin) Institute of Engineering and Technology Bahiyal, Gandhinagar[3]

Email: *arpidn@yahoo.com*

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Abstract

The construction industry is the second largest industry after agriculture. This paper presents a study in the construction industry to improve safety performance. This study was conducted by conducting a questionnaire survey among the contractors and labour of various construction projects. This paper aims to illustrate the safety performance of low and medium-size projects in private sectors in general through observation. Our study focuses on creating awareness about safety for workers to minimise accidents and public safety aspects related to Construction sites like worker personal protective equipment (PPE's), machinery, excavation, height and fall Protection. The findings globally suggest a severe need to improve the safety of labours in the construction industry.

Keywords: - *Construction, safety, Hazardous.*

INTRODUCTION

The construction industry is an unorganised sector, which imparts high risk to the workers associated with construction activities. Construction workers are exposed to a variety of hazards that exists due to ever-changing locations and work environments. The Indian construction industry is quite large and complex in the present scenario, involving the latest technology and manpower. The Indian construction labour force is 7.5% of the total world labour force, and it contributes to 16.4% of fatal global occupational accidents. In the construction industry, the possibility of a fatality is five times more likely than in the manufacturing industry.

In contrast, the risk of a major injury is two and a half times higher. Construction workers are not the only sufferers of accidents, but the public, including children, are affected. These accidents diminish the construction industry's image, and as a result, there is a shortage of skilled labour. In the past few decades, the need for safety awareness among construction industries was realised. This is due to the high cost of work-related injuries, workers compensation, Insurance premium, and indirect injuries. Several techniques can beadopted

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for labour safety, such as safety organisation and management, safety policy, safety organisation, safety training, safety committees, site layout, first aid, lighting, personal protective equipment, and welfare facilities.

Lack of communication among the various departments Involved and lack of proper inspections are the major reasons for accidents occurring at a construction site. The construction site accidents may be caused due to the factors such as the collapse of building parts and masses of earth, falling of Objects and pieces of work on workers fall of persons from heights, ladders, and stairs, loading, unloading, and transportation of loads, working on machines, and blasting with explosives. Construction projects carried out on a large scale follow good safety measures as a separate safety department is available in these companies. But small scale projects taken up by local contractors are not aware of the safety requirements that could prevent construction site accidents. Preventing labour accidents, occupational illness, and injuries should be a primary concern of all employers. The paper examines the current status of safety at the workplace and creates a safe working environment for the employees of construction companies. The study included a physical visit to different construction sites, collecting the data and feedback regarding the number of workers, workers' activity, total work hours, and work shifts from construction site workers using a questionnaire. Information about the number of accidents in small and large construction sites, the cause of the accidents, and the type of injuries suffered by the workers was collected and examined.

Various Techniques

Several techniques can be adopted for labour safety,

Hazard Analysis: Before any construction work occurs, management should assess job site conditions to identify potential areas of serious injuries. Many serious injuries are attributed to workers falls, collapses, being struck by vehicles, trench cave-ins and electrical lines. The analysis should address the sequence of work, the hazards of each activity and control measures to eliminate or minimise the hazard.

Safety Training: Training should be at the core of every safety program. It is important to identify the areas in which training is required. All employees should be trained on hazard communication; other training may include electrical lockout, confined space entry, trenching, back-injury prevention, fall protection, fire protection, equipment safety and other safety concerns.

Safety organisation: The safety organisation on the construction site will be determined by the size of the worksite, the system of employment, and how the project is organised. Safety and health records should be kept.

Which facilitate the identification and resolution of safety and health problems on the site.

Safety officer: One commonly accepted prerequisite for administering a successful safety program is the designation of a safety officer at the project level. It is standard practice on many large projects to require a safety officer. Safety provisions requiring a safety officer should be included in the construction contract.

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NEED OF STUDY

The construction industry is considered one of the most hazardous industrial sectors wherein the construction is more liable to worker accidents. About 48,000 workers die in India due to occupational accidents, of which 38 fatal accidents take place every day in the construction sector. Overall, workplace deaths are twenty times higher in India than in the UK. "India, with 1.25 billion populations, has a strong workforce of 465 million. Despite effects to improve safety performance on-site, it still accounts for a disproportionate number of occupants-related facilities.

OBJECTIVES

- To identify the concept of safety and the causes of risks in smaller and medium size of the project.
- To examine the general status of safety aspects in a small and medium-size construction project.
- To suggest a safety program and recommendation improve safety awareness at the construction site.

REVIEW OF LITERATURE

- **Priyadarshani et al.** stated that in their research paper by the International Labour Organization, one out of six accidents and 25 out of 40 deaths occur at construction sites due to negligence or carelessness. These statistics show that safety is not adequately considered in the Sri Lankan construction industry. Therefore, proper safety management in construction is of utmost importance; hence, his study aims to introduce a benchmark to measure construction safety through a proposed safety management assessment framework.
- **Cheah C.** stated that in his research paper, the objective of his paper is to examine issues and critical factors affecting S&H standards in Singapore. Collective efforts should be pursued at the industry level as the country moves towards the ultimate safety management strategy of self-regulation. The findings also indicate that the challenge of making worksites safe should not be placed solely on the contractors but should be shared by all parties affecting the value chain of construction, including the developers, the consultants and the government.
- **Sharma A.** proposed that in his research paper, the Nepal labour force survey state that most of the reported deaths are the result of negligence, the poor safety performance of a site, unskilled labour and many more. Thus, providing them with a safe working environment is a major concern. Nepal is initiating the process to reduce accidents on sites, but no guidelines are recorded to be found. His numerous research papers were analysed, and a case study of the different countries was carried out to find the concerned bodies responsible for formulation safety regulation, factors that affect safety on construction sites.
- **Kumar et al.** proposed that in his research paper, a detailed literature study was carried out to understand the causes of accidents, preventive measures, and the development of a safe work environment. This project presents the results of a questionnaire survey, which is

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being distributed among various categories of construction workers in the Coimbatore region. The project examines and discusses the total working hours, work shifts, nativity of the workers, number of accidents, and type of injuries taking place in small and large construction sites.

- **IN HIS RESEARCH PAPER, Mohamed N.** proposed that health and safety are an economic and humanitarian concern that requires proper management control. The safety measures are needed to be considered from the initial stage until the completion of work. Good coordination between contractors and workers is required for safe working conditions, lacking in Indian construction fields.The number of injuries and fatalities can be reduced by encouraging and reinforcing behavioural change.
- **S. Chockalingam** stated that Safety management is a leading performance indicator that can provide insight into safety performance before accidents have occurred. In this paper, several construction safety techniques were used for the safety of major construction organisations across India involved in the construction of Thermal power plants, Hydropower plants, Highway projects, Bridgeworks, Refinery works, High rise works, Pipeline works and Dam works and their content validity was verified. These techniques are very much useful for safety construction. Moreover, Total Construction Safety Management (TCSM) is proposed for adequateconstruction safety in India. Safety climate is used for the evaluation of the TCSM.
- **Othman proposed that** the purpose of his study is to examine safety management in the Malaysian construction industry and highlight the importance of construction safety management. The industry has contributed significantly to the economic growth of the country. However, when construction safety management is not implemented systematically, accidents will happen, which can affect the country's economic growth. This study put safety management in construction projects as one of the important elements to project performance and success. The study emphasises awareness and the factors that lead to safety cases in a construction project.
- **D. Kamalnataraj** stated that the Construction industry is one of the most hazardous, with an average of one fatal accident every ten minutes. Such a huge number of accidents and fatalities causes social and economic loss, including the loss of productivity. The root causes for such accidents were analysed universally, and the majority of the cases indicates the constant negligence towards safety by the project personnel in INDIA. As a predominant factor in controlling the accidents, the expected hazards at the site can be controlled during the design stage of the project itself. This study is an attempt to analyse the role of the designers in controlling the hazards at the site and their attitude towards safety.
- **Mohd. Aqleem Mir** stated that his objective of the present work is to study the various site safety measures at building construction sites and compare the site safety measures with relevant safety codes. The study pertains to

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finding out the provisions laid down in the BIS codes for various aspects of safety measures at construction sites in INDIA. The studyincluded physically visiting different construction sites, collecting the data regarding safety provisions adopted, and feedback from site engineers using questionnaires will help implement safety measures at building sites more efficiently. So that that the present study will help out in ascertaining the proper safety planning in building construction.

- **KA Shamsuddin**, in his paper, the main objectives of his paper are protecting safety, health and environment in the construction area. The Occupational Safety and Health Act were passed in 1970 to protect employees by stating that employers have a legal obligation to provide their employees with a safe working environment safety protection in the construction area in Malaysia. This is especially important in construction, as there are several hazards and risks to site workers that are experienced every day. The main objective behind this paper was to create awareness among construction workers about various safety-related protections in the construction industry.
- **Lab Kumar Singh stated that** Health and safety issues have always been a major problem in the construction industry. In previous records construction industry is found one of the most dangerous fields in most developing countries. India is one of them. Building construction workers health and safety knowledge and compliance are poor. His thesis especially found out the level of health and safety knowledge of construction workers, level of health and safety compliance of construction workers, and impact of health and safety knowledge and compliance on project performance.
- **Dishant Shah** proposed that Higher priority is given to the completion of work, compromising the quality and safety of the work. The study consists of data collected from various major contractors experienced in major construction projects and the safety practices observed in the INDIA industry. Causes of hazards, safety training, safety equipment, organisational safety policy and workers attitudes towards safety are highlighted below. The study is done after several visits to construction sites and interviewing the site engineer regarding the safety rules adopted to minimise or eliminate the accidents.
- **Divyang Golaviya** stated that The Indian society and economy had suffered human and financial losses due to the poor safety record in the construction industry. The purpose of this study is to examine safety management in the construction industry. The study will collect data from general contractors who are involved in major types of construction. Collected data include organisational safety policy, safety training, safety meetings, safety equipment, safety inspections, safety incentives and penalties, workers' attitude towards safety, labour turnover rates and compliance with safety legislation. Thus the paper will conclude by providing recommendations and strategies to contractors for improving their safety performance.

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- **M. Samuel Thanaraj** stated that in India, Construction is one of the most dangerous industry sectors. Millions of construction industry accidents occur worldwide, causing damages and injuries to workers and consequently economic losses every year. This paper aims to identify and evaluate safety management in construction projects to minimise and control construction workers' health and safety (H&S). This paper described the various safety and control measures of accidents in building projects to minimise casualties using sensor-based technology.
- **Gaurav Priye** proposed that his paper presents a study in the construction industry to improve safety performance. The main objective of this study is to identify in Indian society the critical success factors responsible for the implementation of safety management in construction projects. This study was conducted by conducting a questionnaire survey among the contractors and clients of various construction projects to test their experience in safety management systems. A questionnaire survey was analysed using SPSS software. The study results revealed many safety problems in the construction industry, such as a lack of knowledge about the necessity of earth connections for power tools.
- T. Subramaniet al. stated that the Indian society and economy had suffered human and financial losses due to the poor safety record in the construction industry. The purpose of this study is to examine safety management in the construction industry. The study will collect data from general contractors who are involved in major types of construction. Collected data include organisational safety policy, safety training, safety meetings, safety equipment, safety inspections, safety incentives and penalties, workers' attitude towards safety, labour turnover rates and compliance with safety legislation. The study will also reveal several factors of poor safety management. Thus the paper will conclude by providing recommendations and strategies to contractors for improving their safety performance.
- **Benny et al**. stated that Construction activities had made a great breakthrough in the last two decades on the back of an increase in development activities and public demand. Still, occupational health and safety issues have become a major concern to construction organisations. The world society and economy have suffered financial and human losses as a result of inadequate safety management in the construction industry. The impact is, however, more in developing countries. The purpose of this study is to explore major safety provisions, and also a detailed study has been conducted on safety management procedures in construction sites. Different types of accidents occurring in construction sites and measures taken to control these accidents are also analysed in this paper. Data have been collected through various site visits, literature reviews, and various construction safety standards, including BIS and OSHA (Occupational Safety and Health Administration). The paper concluded after putting forward recommendations for construction organisations to improve occupational safety in construction sites.

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- **Vaibhav Kumar** proposed that The construction industry is concurrently recognised as a major economic force and one of the most hazardous industries. To improve the safety performance in construction projects, the root causes of construction accidents and factors affecting them must be investigated. This research aims to identify factors affecting safety in construction projects to minimise the frequency of accident occurrences.
- **Karan Singh** stated that his document depicts the current scenario of Indian labours working in the construction industry regarding health and safety issues. It compares the safety principle vs the ground realities happening daily at the site, indicating the need for the professionals to acknowledge the various safety and health rules, regulations, acts, and principles while creating awareness among each other.

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