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An Empirical Study on Mishap Occurrence and Hazard Variability in Indian Construction Projects Using One-Way Analysis of Variance

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Abstract: *This work examines construction site accidents through the lens of occupational health and safety. It outlines fundamental issues related to insufficient safety practices during construction activities, which can result in work-related injuries and accidents on site. To establish a foundation, statistical data on construction site accidents and workplace accidents in general are presented. The discussion also covers the most frequent types of accidents, their rates of occurrence, and corresponding preventive measures. These incidents are then examined and analyzed in detail to enable a thorough comparison of the associated risks. Through this analysis, strategies for accident prevention and reduction are highlighted. In addition, the underlying causes of accidents are explored, including the level of technical readiness at construction sites and the role of the site management team, both of which can significantly influence accident occurrence.*

Current health and safety legislation is outlined together with the specific requirements that must be followed during construction activities. This allows for an assessment of whether site personnel comply with these regulations or whether further improvements are needed to reduce existing accident rates and enhance workers' safety awareness. Finally, the thesis seeks to evaluate the process of reintegrating workers into the construction site after they have experienced an accident and taken sick leave. It examines the accident from the perspectives of the injured workers, their co-workers, and management, considering whether additional preventive measures have been implemented, in what manner, and whether the overall perception and seriousness of workplace accidents among site employees have changed.

The investigation revealed that Occupational Health and Safety (OHS) principles are followed at construction sites to some extent. However, there is significant room for improvement, particularly in communication, as site management often failed to properly inform employees about procedures during emergencies. On a positive note, compliance with OHS regulations and the use of personal protective equipment (PPE) capable of preventing accidents were generally satisfactory. The study also highlighted that the consequences of construction site accidents for workers can be very severe. Fortunately, employees demonstrate a relatively strong awareness of these risks. Analysis of Variance (ANOVA) is a statistical method used to compare differences between group means by analyzing variances. It is applied in airport development and construction projects across various facilities in India..

Keywords: Construction Site Safety, Occupational Health and Safety (OHS), Workplace Accidents, Accident Prevention, Safety Management, Personal Protective Equipment (PPE), Risk Assessment, Accident Analysis, Emergency Preparedness, Worker Reintegration, Statistical Analysis, Analysis of Variance (ANOVA), Construction Management, Safety Compliance, Technical Readiness etc

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I. INTRODUCTION

1.1 Construction in India

Construction in India relies more heavily on manual labor compared to developed countries. In many developing nations like India, there is a significant distinction between large, medium, and small contracting firms. While most large companies have documented safety policies, employees are often unaware of them. Despite this, several major contractors demonstrate a genuine commitment to safety by implementing various safety protocols, offering worker training, and employing dedicated safety personnel on-site. The construction industry in India is highly susceptible to hazards due to on-site activities, with projects typically involving a large number of contractual workers. During project execution, these workers face numerous risks, including occupational illnesses and health hazards, which can lead to injuries. Consequently, construction projects often experience delays because of lost working hours and legal complications, ultimately causing cost and schedule overruns. Therefore, it is crucial for construction projects to establish clear safety guidelines and procedures, and to raise awareness among workers, supervisors, and engineers regarding safe practices on-site Therefore, the importance of safety at construction sites is relevant more than ever not only from the perspective of the general health of the people working on sites but also due to the associated causes such as economical influences. However, even in 2020, construction site employers are often not concerned about the safety at the site more than necessary or given by the law, as they are unaware of the true consequences these bring towards them, in the form of the benefits of Health and Safety. Asian Institute for occupational safety and health conducted a case study where the prevention principles related to work accidents are presented, promoting the benefits of the investment in the preventive measures in comparison with dealing with an accident at the construction site. According to the National Safety Council: To be able to support the idea of keeping the health and safety principles by the companies and Its employees, apart from the physical harm to those present in an accident, there are several direct consequences after such an event occurs at the site

1. Employees:

- Decreased quality of life or even death
- Difficulty to get back in society/work environment
- Financial losses
- Decrease of life quality of the affected employee and relatives

2. Employers:

- Social consequences (employee frustration, often recruiting new employees, damaged reputation)
- Legal consequences (prosecution of those responsible)
- Economic consequences (delays in production, compensation of victims, government fines)

3. Government:

- The cost of medical care
- Welfare costs
- Non-compliance with international obligations with labor protection

1.2 Scope of the study

The scope of this thesis is the evaluation of the actual use of standards principles at the construction site by addressing certain issues towards site workers. Based on the data from the available resources regarding accidents in the construction industry, an assessment is made whether the importance of more strict application and promotion of safety at the site is required. This project is scoped to an assessment of a selected construction site in one of the countries of Asia. Based on the outcomes from this construction site, an assessment is made. The target group of this thesis is the general public, but mainly professionals and individuals working within the construction industry. Especially concerning Occupational Health and Safety.

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1.3 The need for this Research work

As mentioned earlier, accidents at construction sites are a well-known issue for decades. Nowadays, the view on an accident and its prevention has shifted slightly in a positive way, however, room for improvement is still significant, being a huge sector. Companies are looking at the effectiveness in all aspects, mainly the financial matter. Therefore, this thesis intends to provide an understanding of the problem and, the importance of the promotion of health and safety at sites, as well as performing of accidents and post-accident analysis by the presentation of the visible outcomes and result in indicators

1.4 The originating ideas

Within the Risk and Safety Management, which is the overall topic of the master program, the course of Health and Safety management took place at a later stage. After the discussion with the supervisor, construction site accidents were selected due to the internship at the site experience of the student, as well as the supervisor's previous experiences within the construction industry, specifically from the Health and Safety perspective As it was discussed during the start-up meeting, construction site accidents are rather a common topic within the construction industry researches, however, a lack of information on the specific post-accident prevention, recovery as well as the return of the injured one back on the site, was noticed. Therefore, this choice was made to examine whether it will be possible to touch upon this specific subject and withdraw some more information, as well as analyze the possibilities of the gathered information into practice.

1.5 Motivation

Construction site from the risk and safety perspective is not a new topic, therefore quite few could be found focusing on a similar subject as this thesis. Already available reports and research on construction safety can help lawmakers as well as site management teams, with mitigate measures. However, the lack of reports investigating the post-accident placement of the construction site workers affected by the accident encouraged originated this thesis' topic. This is where the report delivers beneficial information regarding the matter of the injured employees' integration after an accident. This may serve to the officials responsible for the overall functioning of the construction industry, as well as of each construction site to examine and re-evaluate the actual post-accident set-ups. The learning objective of the last semester as well as the thesis of M Tech in Industrial Safety is set to be able to apply gathered knowledge from the subjects included in the education and dispose of them in a real-life topic, which has been selected. The knowledge, skills, and competencies from the subjects such as Operational Risk Management, Health and Safety Management, and Emergency Management, are applied. Specifically speaking, these include the use of methods by which the risk is identified, understanding these risks and risk factors that influences them. At the same time, there is a necessity to understand the methods that can mitigate these risks. To be able to do so, there is a need for a plan preparation as well as its possible modification whenever necessary, along with the capability of finding alternatives to some most critical processes. Lastly, the presentation of the findings and results understandably and efficiently is important.

1.6 Objectives

Specifically speaking, these include the use of methods by which the risk is identified, understanding these risks and risk factors that influences them. At the same time, there is a necessity to understand the methods that can mitigate these risks. To be able to do so, there is a need for a plan preparation as well as its possible modification whenever necessary, along with the capability of finding alternatives to some most critical processes. Lastly, the presentation of the findings and results understandably and efficiently is important. Application of one way analysis of variance in selected construction project work

1. Examine the causes and frequency of construction site accidents.
2. Assess the implementation of health and safety regulations on construction sites.
3. Identify areas where safety practices and communication can be improved.
4. Evaluate the effectiveness of preventive measures, including the use of personal protective equipment (PPE).
5. Investigate the process of worker reintegration after accidents and its impact on overall safety awareness.

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6. Provide recommendations to reduce accident rates and enhance occupational health and safety on construction sites.

II. LITERATURE REVIEW

2.1. Construction Mishap Occurrence and Safety Performance

Construction mishaps (accidents, injuries, and near-misses) are widely acknowledged as a persistent global problem, with developing countries experiencing disproportionately higher fatality and injury rates.

Hinze (2024) provided one of the earliest systematic analyses of construction accidents, highlighting unsafe acts, site conditions, and management failures as dominant causes. Subsequent studies emphasized that accident occurrence is not random but influenced by project type, workforce characteristics, and organizational safety culture.

Haslam et al. (2023) conducted a large-scale accident causation study in construction projects and identified failures in risk assessment, poor communication, and inadequate supervision as critical contributors to mishaps. Their work supports empirical modeling of accident occurrence based on identifiable variables.

In a developing-country context, Lingard and Rowlinson (2000) demonstrated that accident frequency is significantly higher in projects with weak enforcement of safety regulations, reinforcing the need for statistical comparison across project categories.

Key relevance to study: These works justify empirical examination of mishap occurrence across different construction settings and support hypothesis testing of accident variability.

2.2. Hazard Identification and Variability in Construction Projects

Hazards in construction are inherently dynamic due to changing site conditions, work phases, and workforce composition. Sawacha, Naoum, and Fong (2022) categorized construction hazards into physical, mechanical, environmental, and organizational hazards, noting that their occurrence varies significantly by project type.

Zhou, Goh, and Li (2021) introduced a safety risk framework demonstrating that hazard exposure is not uniform across activities such as excavation, concreting, and structural erection. Their findings indicate statistically significant differences in hazard levels across construction stages.

Manuele (2020) emphasized the concept of hazard variability, arguing that construction safety research must move beyond descriptive statistics to comparative analysis to identify which hazards dominate under specific conditions.

Key relevance: These studies conceptually support examining hazard variability and statistically comparing hazard means across groups, which aligns directly with one-way ANOVA

2.3 Research Gap Identified from Literature

Despite extensive global research on construction safety, the literature reveals notable gaps:

1. Limited empirical studies focusing exclusively on Indian construction projects using inferential statistics.
2. Insufficient examination of hazard variability rather than overall accident rates.
3. Scarcity of studies applying one-way ANOVA to compare mishap occurrence across multiple hazard or project categories in India.

This study directly addresses these gaps by empirically analyzing mishap occurrence and hazard variability using one-way ANOVA within the Indian construction context.

III. AREA OF STUDY

3.1 Introduction

The area of study defines the geographical, industrial, and operational boundaries within which the present research is conducted. This study focuses on construction projects in India, with particular emphasis on mishap occurrence and hazard variability across different project environments. The Indian construction sector provides a relevant and appropriate setting for this research due to its rapid growth, heterogeneous project characteristics, and persistent safety challenges.

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3.2 Geographical Scope of the Study

The geographical scope of the study covers selected construction projects across India, representing diverse regional, climatic, and socio-economic conditions. India's vast geographical diversity—ranging from urban metropolitan regions to semi-urban and developing zones—results in varied construction practices and safety environments.

The study includes projects located in:

•Urban regions with high-rise and infrastructure development
•Semi-urban regions dominated by residential and commercial construction
•Industrial corridors involving heavy civil and industrial construction

This geographical spread ensures variability in:

•Climatic conditions (hot, humid, monsoon-prone, dry zones)
•Workforce composition (migrant and local labor)
•Site management practices and safety enforcement levels

Such diversity is essential for analyzing hazard variability and mishap occurrence using statistical comparison methods.

3.3 Industrial Scope: Indian Construction Sector

The study is situated within the Indian construction industry, one of the largest contributors to national GDP and employment. The sector is characterized by:

•Labor-intensive operations
•High reliance on contract and subcontract labor
•Varying degrees of mechanization
•Limited formal safety training for workers

Construction activities covered under this study include:

•Building construction (residential and commercial)
•Infrastructure projects (roads, bridges, metro, and utilities)
•Industrial construction (factories, plants, warehouses)

The selection of multiple construction segments allows for meaningful comparison of mishap occurrence and hazard exposure across project types.

3.4 Project-Level Scope of the Study

At the project level, the study examines construction sites at different stages, such as:

•Excavation and foundation work
•Structural framework and superstructure activities
•Finishing and services installation

These stages are associated with different hazard profiles, including:

•Falls from height
•Struck-by and caught-in-between hazards
•Electrical hazards
•Equipment and machinery-related risks

By including projects at varying stages of completion, the study captures the dynamic nature of hazards and their contribution to mishap occurrence.

3.5 Workforce and Site Conditions

The study area also encompasses the construction workforce and site conditions, which are critical determinants of safety performance. Indian construction sites typically involve:

•Skilled, semi-skilled, and unskilled workers
•Migrant labor with language and literacy barriers
•Long working hours and temporary site infrastructure

Site conditions considered within the study include:

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•Availability of personal protective equipment (PPE)
•Safety signage and barricading
•Housekeeping and material storage practices
•Supervision and safety monitoring mechanisms
These factors influence hazard exposure and contribute to variability in mishap occurrence across sites.

3.6 Justification for Selection of the Area

The area of study was selected based on the following considerations:
1. High Accident Incidence: Indian construction projects report higher accident rates compared to many developed countries.
2. Hazard Diversity: Wide variation in construction methods and site conditions leads to diverse hazard profiles.
3. Research Gap: Limited empirical studies in India have applied ANOVA to analyze mishap occurrence and hazard variability.
4. Practical Significance: Findings from this area can contribute to improving construction safety management practices in India.

3.7 Summary

In summary, the area of study encompasses selected construction projects across India, covering multiple regions, project types, and construction stages. The diversity inherent in the Indian construction industry provides an appropriate and robust setting for examining mishap occurrence and hazard variability through empirical data and statistical analysis.

IV. PROBLEM DESCRIPTION

As presented in the introduction, there is no doubt work accidents require special attention, especially within the construction industry, which lies within the some affected industries. At the same time, most employers representing construction companies are well aware of the consequences that bring in the financial aspects, when an accident occurs. Several duties need to be fulfilled by employers when an accident already occurred. These include sick leave, time offs, replacement of the lost employee, additional training, etc. As statistical data collected by the Construction Industry Development Council (CIDC) indicate, the number of accidents within the construction sector is still high, even though a slow decrease has been noticed in the period from 2015 to 2023. Therefore, one of the essentials is to analyze different aspects of these accidents. Investigation of what has an impact on their occurrence, but at the same time, their reduction, is necessary. With ongoing worldwide development, a rising number of people and their needs, there is an expectation that construction jobs will be occupied by more people than ever before. Based on previously mentioned, an inquiry on compliance with Occupational Health and Safety (OHS) principles at the construction site should certainly be the main point of research. At the same time, should any correlation with the occurred accidents be detected, an amendment is to be prepared.

4.1 Overview of Safety Challenges in Indian Construction Projects

The Indian construction industry is one of the largest employers globally but continues to face significant safety concerns due to:

1. Labor-Intensive Practices

Heavy reliance on manual labor increases exposure to physical hazards.
Workers often have limited training in safety protocols, making them vulnerable to accidents.

2. Informal Workforce and Migrant Labor

A large portion of workers are temporary or migrant laborers.
Language barriers and lack of safety awareness exacerbate hazard exposure.

3. Variable Site Conditions

Differences in terrain, climate, and infrastructure affect hazard types and severity.

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Poor site housekeeping and improper material storage contribute to accidents.

4. Weak Safety Enforcement

Inconsistent compliance with safety regulations and limited supervision.

Lack of personal protective equipment (PPE) and safety signage at many sites.

5. Inadequate Risk Assessment

Hazards are not systematically identified or prioritized.

Sites often lack structured hazard monitoring or reporting mechanisms.

4.2 Specific Problems Identified

Based on preliminary surveys, literature review, and site observations, the following key problems have been identified in Indian construction projects:

Problem Area	Description	Impact on Mishap Occurrence
Falls from Height	Workers exposed to scaffolds, ladders, and elevated platforms without proper fall protection	High frequency of severe injuries and fatalities
Struck-by Hazards	Falling objects, moving vehicles, and machinery	Moderate to severe injuries, near-misses often unreported
Electrical Hazards	Live wires, improper grounding, and temporary electrical setups	Risk of electrocution and minor to severe injuries
Equipment & Machinery	Lack of guarding, poor maintenance, improper operation	Accidents with high severity, sometimes fatal
Organizational Hazards	Poor communication, insufficient supervision, inadequate safety training	Indirectly increases likelihood of all mishap types

Table 4.3 Specific Problems Identified

4.3 Causes of Hazard Variability

The variability of hazards across projects can be attributed to:

1. Project Type: Residential, commercial, industrial, and infrastructure projects have different hazard profiles.
2. Construction Stage: Excavation, structural works, finishing, and services installation present different levels and types of risks.
3. Workforce Characteristics: Experience, skill level, and safety training of workers affect exposure.
4. Site Management Practices: Level of supervision, availability of PPE, and hazard monitoring influence accident occurrence.

4.4 Justification for Empirical Investigation

Despite widespread recognition of safety challenges, the following gaps remain in the Indian construction context:

- Limited quantitative studies measuring mishap occurrence across different project types and stages.
- Insufficient analysis of hazard variability using statistical methods such as ANOVA.
- Lack of structured data to guide targeted interventions for accident prevention.

This research addresses these gaps by systematically collecting empirical data on mishap occurrence and hazard exposure, and analyzing variability across projects and hazard categories using One-Way ANOVA.

V. PROBLEM FORMULATION

Following earlier presented, two research statements are going to be assessed and scrutinized as a part of an analysis provided further in the thesis. These are as follows:

1 Assessment of the condition of OHS at the construction site, along with detection of the weaknesses, which might serve as a guide for the OHS improvement plan

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2 Assessment of the procedures taken by the management after an accident occurs at site

VI. METHODOLOGY

Collection of data

Analysis of the situation within the construction industry is based on the available literature and the latest development of the accident in construction. These data were collected from the official Asia organization, which gathered data on accidents for the recent 13-year period for all 7 Asian member states. These recent data served as a prerequisite for additional research in the matter of health and safety procedures at construction.

At the same time, data on the actual condition of the OHS within construction sites were obtained from a survey that was handed out to fifteen construction site employees.

Data validity

The collection of data was followed by its validity. That was done mainly in selecting only renowned sources such as national or international organizations covering the sphere of OHS at construction sites. These data were used in connection with the thesis aim and re-evaluated whether they correspond to prepared content and may cooperate in the formation of this research's outcome.

Survey methods

Information regarding the survey used in other chapter is presented. Survey participants are construction site workers at, and this is where the survey was conducted. They participated in constructing an administrative dwelling at the time. The selection of the workers and construction site is purely random, but dependent on a fact, there was a connection to workers due to the previous employment of a student at this specific construction site and therefore, it was possible to ask them to participate in a survey. Otherwise, it might be challenging to get any access to any construction at all. The actual situation of Covid-19 has participated in this matter of forbidden construction site visits. There was one representative selected from the management, which was able to hand out the papers to workers. and return them after fill in. This request with undergoing a survey and sharing a personal experience on OHS at the site addressed to fifteen site workers as this was the available number that was personally known and could be contacted. All these persons received a paper with survey questions they needed to fill in. Nine of them actually participated and returned these papers– 60% feedback rate. The age, gender, education, or working experience of the participants was not specifically set due to the shortage of construction workers being able to take the survey. As there are several subcontractors at this large site, these workers were reviewed on the OHS provided by the construction company they were employed in or hired by. The survey consisted of 11 questions. Their role was to analyze used OHS within their company, its downsides, and its benefits. The survey was anonymous and options were about to be circled. Received answers were analyzed further in chapter 7.1 based on the method of descriptive statistics. The intention was to summarize common signs of the collected data set, from the selected sample. As a part of the descriptive statistics, along with the presentation of the collected results, the characteristics of the answers were examined. This was done to make a judgment based on received replies and relate them to questions that were prepared in the first place.

VII. APPLICATION

To provide a better understanding of the topic, this problem analysis is prepared. Within this chapter, construction at sites is going to be analyzed in order to refer to the issue of the accident in general. Therefore, the below-listed sub-topics are discussed:

1. Introduction to the construction industry
2. Occupational Health and Safety principles
   OHS Legislation
   OHSAS 18001:2009
   Personal Protective Equipment

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3. Overview of the types of accidents
4. Explanation of the risk factors
5. Preventive measures available to avoid accidents

Year	Incidents
2015	90
2016	92
2017	109
2018	100
2019	120
2020	89
2021	69
2022	62
2023	55
2024	67
2025	138

Figure 2 Non-fatal accidents in India construction in 2015-2025

Situations associated with hazards at the construction site occur in almost every kind of this industry. General hazardous factors can be divided into three categories

Psychosocial: Workplace relations among colleagues

Physical: Climate (pressure, humidity, temperature)

o Dustiness

o Radiation (electromagnetic) and optical (lighting)

o Vibration-acoustic (chemical preparations)

Biological factors: Harmful fauna and flora

These are hazards present at the construction site; however, it is possible to identify various risk factors that interfere with the construction process and whose direct effect comes from the earlier presented hazards. Yet, it is necessary to take these risks into account so that such risks can be eliminated in the future. For several years a great effort has been devoted to the study of risk as such, due to the new developing situations which occur, and that the entire industry can learn something from

Most common accidents

Fall

Struck by objects

Electrocutions

Caught-in/between

VIII. CONSTRUCTION SITE ANALYSIS

Results shared in this chapter are based on the replies collected from the survey that was filled by the construction site employees. As 9 out of 15 surveys returned, it might be considered that the overall interest in OHS might not be that high from the perspective of the employees. However, it must be considered that there might be several other aspects that stopped papers from returning, such as loss, damage, being not present at work when the collection took place, and so on. Further, the question from the survey is going to be analyzed below by showing the actual question and number of replies by the employees. Each question is graphically presented to reinforce visually the successfulness of occupational health and safety procedures in real-life examples.

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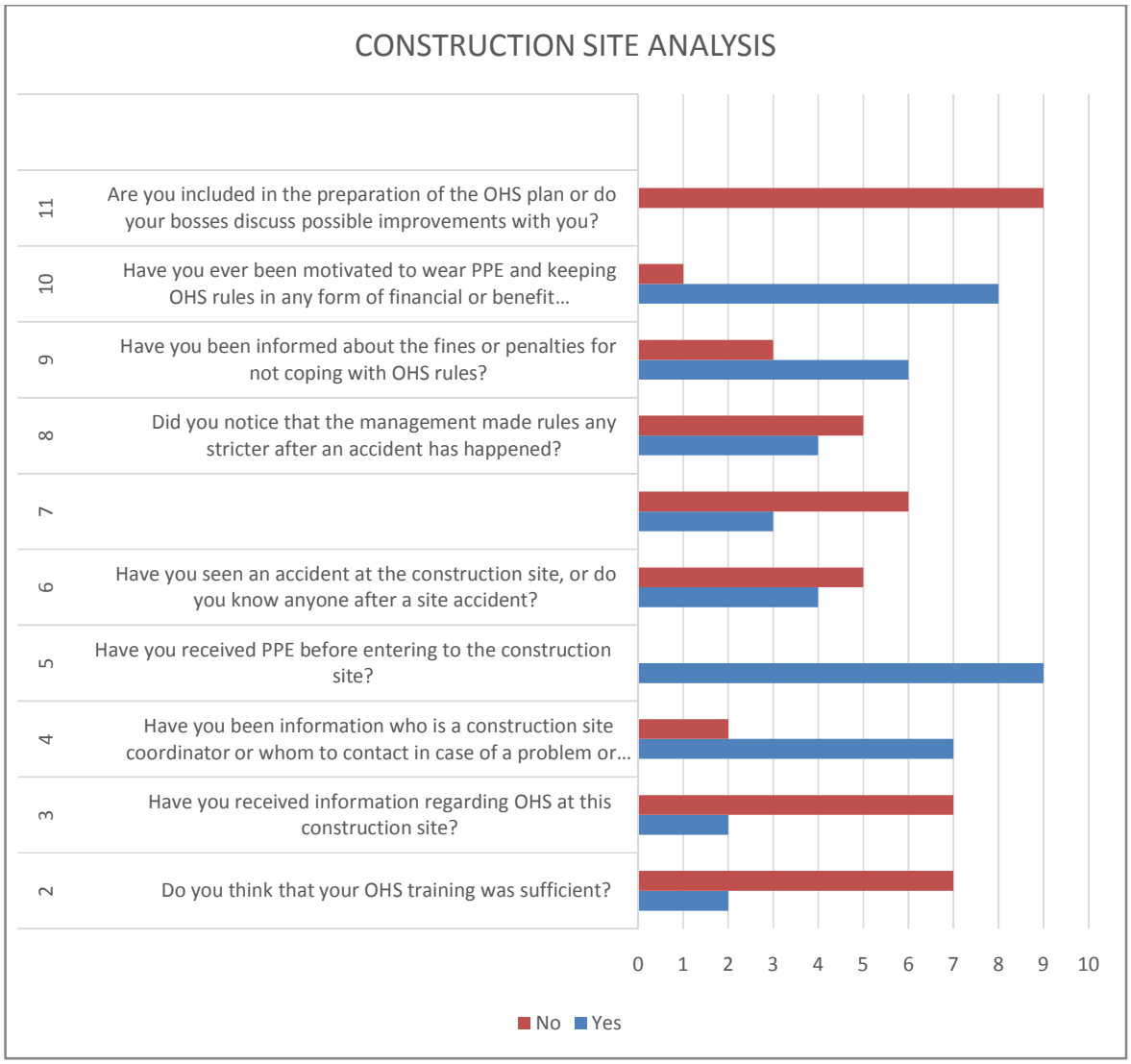

Summary of One Way Analysis of Variance (ANOVA) on Causes of Accidents on Construction Sites.

S/N	Causes of Accidents on Construction Sites	Sig. Level	Accept H_0	Reject H_0	Accept H_A	Reject H_A
1	Non implementation of safety plans on site	0.000	×	√	√	×
2	Failure by management to enforce safety rules	0.000	×	√	√	×
3	Unsafe acts or unsafe working condition	0.000	×	√	√	×
4	Incompetence of worker or improper attitude	0.006	√	×	×	√
5	Ignorance on safety technique or lack of knowledge	0.004	×	√	√	×
6	Poor site layout	0.000	×	√	√	×

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7	Non implementation of safety policies by management	0.000	×	√	√	×
8	Non adherence to safety policies by worker	0.002	×	√	√	×
9	Inadequate personal protective clothing and equipment	0.000	×	√	√	×
10	Lack of site control measures i.e. safety signs, tags, barriers, etc	0.000	×	√	√	×
11	Inadequate employees training	0.000	×	√	√	×
12	Using unsafe equipment, hands instead of equipment or using equipment unsafely	0.644	√	×	×	√
13	Operating equipment at unsafe speed	0.975	√	×	×	√
14	Using unsafe method for work execution	0.027	√	×	×	√
15	Inadequate or Unsuitable illumination	0.000	×	√	√	×
16	Pre-job and post-job briefings about safety	0.000	×	√	√	×
17	Fatigue	0.019	√	×	×	√

Summary in above table of the one way analysis of variance (ANOVA) performed on causes of accidents on construction sites. This table reveals the factors responsible for the causes of accidents on construction site which are the following: Non implementation of safety plans on site; Failure by management to enforce safety rules; Unsafe acts or unsafe working condition; Ignorance on safety technique or lack of knowledge; Poor site layout; Non implementation of safety policies by management; Non adherence to safety policies by worker; Inadequate personal protective clothing and equipment; Lack of site control measures; Inadequate employees training; Inadequate or Unsuitable illumination; and Pre-job and post-job briefings about safety.

VIII. CONCLUSION AND RECOMMENDATIONS

Conclusion: From the comprehensive research carried out on effects of accidents on construction projects delivery, the following conclusions were drawn from an in-depth analysis of this research work:

1. The causes of accidents on construction sites emanated from the shortcoming of management and site manager which are mainly lack of adequate supervision on site and failure on the part of management to implements safety plans and policies in their various organizations. In addition, management has failed to provide adequate personal protective equipment (PPE) due to worker orientation that productivity will not be adequately enhanced.
2. Projects delivery processes were disrupted from its regular operations due to loss of productivity, delayed production and slowdown in operations while accidents causes are determined. Invariably, project duration was extended.
3. The expected project profit margin decreases while the estimated project budget escalates due to the indirect cost incurred in the course of accidents.

Recommendation: The following recommendations were given based on the conclusion derived from data analyzed in this research:

1. The India base construction industry in collaboration with the Ministry of Works and Housing should adopt a safety standard that would be enforced in india construction industry.
2. Management should endeavor that safe policies and safety rules are implemented in their organization at optimum cost.

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3. Government should set up disciplinary committee consisting of representatives from the construction industry and local authority that would be empowered to inspect construction sites and penalize firms who do not conform to safety policies and safety rules. Also, review and develops policies on safety

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