

# Identifying Factors Influencing Health and Safety Performance among Construction Sites in Jalingo, Taraba State, Nigeria

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## ABSTRACT

The construction industry is notorious for its high rate of accidents, making health and safety performance a critical concern. Despite efforts from both government and private sectors to improve health and safety performance, accidents remain prevalent, especially on construction sites. This study aims to identify the factors influencing health and safety performance at these sites. Through a quantitative research design, data was collected from 106 respondents across various construction roles, including project managers, architects, builders, civil engineers, and health and safety managers. The findings reveal that Process Factors, such as hazard identification and risk assessments, along with Technical Factors, play the most significant roles in shaping safety performance, formulation, management activities, and personnel attitudes also contribute substantially to safety outcomes, while incentives, although important, have a lesser impact. This study underscores the need for construction companies to prioritize process and technical improvements, alongside robust management and policy frameworks, to enhance health and safety performance and reduce accidents on construction sites.

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## 1.0 Introduction

The construction industry is one of the most accident-prone sectors, with incidents occurring frequently. As a result, worker health and safety are prioritized within the industry. Both government and private sectors are actively working to improve health and safety performance, yet the rate of accidents at construction sites remains high. Given its crucial role in the social and economic development of any country, ensuring health and safety in the construction industry is essential. According to Shafique *et al.* [1] the primary causes of accidents at construction sites often stem from inadequate health and safety training for workers and the physically demanding nature of the job. For a long time, project managers as the primary leaders of construction projects, were viewed as the key individuals responsible for ensuring safety performance. On the other hand, construction site workers often have limited involvement in organizational decision-making, hold low organizational status, and depend heavily on leadership coordination for collaborative efforts among different teams. In light of these, this paper aim to identify some factors influencing health and safety performance among construction sites in Jalingo, Taraba State, Nigeria.

Christian *et al.* [2] define safety performance as the process of maintaining workplace safety through various

interventions, with a strong emphasis on safety behavior among coworkers. This definition highlights that safety performance is not solely reliant on formal policies or management practices but is deeply rooted in the day-to-day actions and interactions of workers. Hu *et al.* [3] highlight that safety improvements in the workplace are largely driven by initiatives such as safety training and the application of newly acquired skills. These initiatives are essential because they equip workers with the knowledge and competencies needed to recognize potential hazards, follow safety protocols, and respond effectively to emergencies. Zohar [4] opines that the critical importance of identifying factors that lead to serious injuries and accidents in order to improve safety performance in the workplace. According to Zohar, understanding the root causes of these incidents is essential for developing effective safety interventions and preventing future occurrences. Maiti and Chor [5] stress that health and safety risks have a profound impact on the image of the construction sector, which is often perceived as one of the most hazardous industries. Frequent accidents, injuries, and fatalities associated with construction work can tarnish the sector's reputation, affecting public trust, client confidence, and worker morale. Torner *et al.* [6] emphasized the need for improving the measurement of safety performance to address the persistent issue of accidents



occurring despite extensive safety training. They argue that while safety training is crucial, it alone is not sufficient to eliminate accidents and injuries in the workplace. Neal *et al.* [7] argue that, safety performance is intrinsically linked to both good job performance and safety commitment, suggesting that effective safety practices are not just about adhering to rules but are deeply intertwined with overall job effectiveness and personal dedication to safety.

### 1.1 Health and safety performance in the construction industry

Health and safety at all stages of construction projects is inevitable, because safety performance not only overcome issues such as poor quality work, unsafe working conditions, and lack of environmental control, but also reduce costs and enhance productivity [8]. It is imperative to provide safe working conditions to construction workers due to intrinsic hazards and risks associated with every work situation [9]. It was observed that the health and safety performance of construction industry is usually a function of safe working conditions and deals with both physical and psychological wellbeing of workers on sites and other persons whose health is likely to be adversely affected by construction [10]. Durdyev *et al.* [11] argue that health and safety performance is not adequately considered in many developing countries. In addition, health and safety related research provides evidence of efforts geared towards improving health and safety performance in the sector. Regrettably, the industry still grapples with health and safety challenges which further results in high fatality rates in construction operations.

### 1.2 Level of health and safety performance in developed and developing nations

Generally, there is a lack of comprehensive analysis of the underlying causes of the difference in construction health and safety performance between developing and developed countries. However, health and safety performance is often evaluated based on negative indicators such as accident number, days lost, injury rates and accident cost. Permana [12] opines that the importance of evaluating health and safety performance is to gauge the effectiveness of construction firm management in accident prevention by setting out safety policies. Although, the field of occupational health and safety has always been a focus of academic research, only a few researchers have investigated or compared the occupational health and safety performance between developing and developed countries [13]. Exploring the level of health and

safety performance in developed and developing nations is important to this study. Occupational health and safety remains neglected in developing countries because of competing social, economic, and political challenges. Despite global efforts to address occupational health and safety (OHS) concerns, an estimated 2 million work related fatalities and 330 million work-related accidents still occur each year [14]. The incidence of workplace fatalities varies enormously between countries. Studies have indicated that there appears to be a significant difference between developed and developing countries. It has been estimated that people in developing countries are exposed to more than 80% of global occupational hazards [15].

### 2.0 Materials and Methods

The present study aims to identify factors influencing health and safety performance among construction sites. The study was conducted using quantitative research design; the questionnaire, for the survey has been designed on the basis of previous studies. The study targets an accessible population of professionals that have transverse experience in construction projects. These professionals comprise; project managers, health and safety managers, architects, builders and civil engineers. A total of 132 questionnaires were administered to the study respondents. The distribution yielded 106 valid responses representing 80% response rate. Severity index was used, in SPSS to find out the most influencing factors with the help of ranks. The questionnaire was designed to address the research objectives. The questionnaire typically consists of a set of structured questions that respondents can answer in a standardized and consistent manner. The design incorporated the use of close-ended questions and 5-points Likert scale was used for the variable items to ease the means of assessing the respondents.

### 3.0 Results and Discussion

#### 3.1 Results

Data were collected through the use of Questionnaire from 106 respondents, who are working in Building and civil construction projects across construction sites in Jalingo, Taraba State. Out of 106 questionnaires, 19 included responses from project managers, 37 from Builders, 32 from Architects, 26 from Civil Engineers and 18 from Health and Safety Managers. Answers to the questionnaire were obtained through Google Forms and in person. Table 1 shows the factors elements influencing health and safety performance and Table 2 shows the factors influencing health and safety performance among construction sites in Jalingo, Taraba State.



**Table 1: Factors Elements Influencing Health and Safety Performance in Construction Sites**

S/N	Management Activities on site	Mean	SD	Remark
	<b>Factor Elements</b>			
1	Safety Inspection	4.253	0.5892	Highly significant
2	Safety Meeting	3.680	1.3643	Significant
3	Safety Regulation	4.253	0.5625	Highly significant
4	Enforcement of Safety Training and Education	4.640	0.2304	Highly significant
5	Safety Communication	4.747	0.1892	Highly significant
6	Environmental compliance	3.920	1.1136	Significant
7	Client or customer relationship	2.453	2.7812	Moderately significant
8	Emergency preparedness	3.880	1.3323	Significant
	<b>Aggregate</b>	<b>3.978</b>	<b>1.0203</b>	
	<b>Incentives</b>			
	<b>Factor Elements</b>	<b>Mean</b>	<b>SD</b>	<b>Remark</b>
9	Monetary Incentives	3.867	1.2089	Significant
10	Non-monetary Incentive	2.067	1.1022	Less significant
11	Disciplinary Action	4.107	0.7353	Highly significant
12	Team building activities	4.240	0.6624	Highly significant
13	Recognition and awards	3.493	1.6633	Significant
14	Transportation subsidies	4.040	1.1851	Significant
15	Health and wellness benefits	4.293	0.6340	Highly significant
16	Flexible work arrangements	3.493	1.5300	Significant
	<b>Aggregate</b>	<b>3.700</b>	<b>1.0901</b>	
	<b>Policy Factors</b>			
	<b>Factor Elements</b>	<b>Mean</b>	<b>SD</b>	<b>Remark</b>
17	Formulation of Safety policies	4.493	0.4100	Highly significant
18	Well-written and High standard policies	3.853	1.1918	Significant
19	Comprehensible and explicit policies	3.573	1.8180	Significant
20	Occupational Health and Safety Management System	3.933	1.2889	Significant
21	Environmental policies	4.280	0.6016	Highly significant
22	Quality assurance policies	3.893	1.0820	Significant
23	Insurance policies	4.427	0.4046	Highly significant
24	Security and cyber security policies	3.880	1.3323	Significant
	<b>Aggregate</b>	<b>4.042</b>	<b>1.0161</b>	
	<b>Personnel Factors</b>			
	<b>Factor Elements</b>	<b>Mean</b>	<b>SD</b>	<b>Remark</b>
25	HQ-Management Attitude towards Safety	3.667	1.4756	Significant
26	Supervisors and worker's attitude towards safety	3.720	1.5883	Significant
27	Constant Monitoring of Human Errors	4.040	0.9984	Significant
28	Experience and expertise	4.173	0.5966	Highly significant
29	Physical fitness and health	3.680	1.3643	Significant
30	Mental health and stress	4.400	0.4533	Highly significant



31	Adaptability and flexibility	3.693	1.5993	Significant
32	Problem-solving skills	4.387	0.5838	Highly significant
<b>Aggregate</b>		<b>3.970</b>	<b>1.0825</b>	
<b>Technical Factors</b>				
	<b>Factor Elements</b>	<b>Mean</b>	<b>SD</b>	<b>Remark</b>
33	Organized Technicalities	4.333	0.6222	Highly significant
34	Risk Response and Risk management system	3.880	1.6256	Significant
35	Adequate PPE that is aligned with the nature of work	4.560	0.3264	Highly significant
36	Site conditions	3.880	1.0923	Significant
37	Climate and Weather	3.880	1.3056	Significant
38	Material Selection	3.827	1.1833	Significant
39	Equipment and Machinery	4.787	0.1678	Highly significant
40	Regulatory Compliance	3.840	1.2011	Significant
<b>Aggregate</b>		<b>4.123</b>	<b>0.9405</b>	
<b>Process Factors</b>				
	<b>Factor Elements</b>	<b>Mean</b>	<b>SD</b>	<b>Remark</b>
41	Identify Hazards	4.613	0.3705	Highly significant
42	Assess Risk	4.627	0.2340	Highly significant
43	Contingency plans for works	4.027	1.3326	Significant
44	Safety Standard	4.760	0.1824	Highly significant
45	Project Planning	4.400	0.5867	Highly Significant
46	Resource Allocation	4.120	1.1456	Highly Significant
47	Quality Control and Assurance	4.480	0.3829	Highly Significant
48	Scheduling and Sequencing	3.587	1.7625	Significant
<b>Aggregate</b>		<b>4.326</b>	<b>0.746</b>	

**Decision rule:** 0.1-1.0 very less significant, 1.1-2.0 less significant, 2.1-3.0 moderately significant, 3.1-4.0 significant, 4.1-5.0 highly significant

**Table 2: Factors Influencing Health and Safety Performance among Construction Sites in Jalingo, Taraba State**

Factors	Aggregate Mean	SD	Severity index
Incentives	3.700	1.0901	6
Personnel factor	3.970	1.0825	5
Management activities	3.978	1.0203	4
Policy Factor	4.042	1.0161	3
Technical Factor	4.123	0.9405	2
Process Factor	4.326	0.7496	1

**Decision rule:** 1 extremely severe, 2 highly severe, 3 severe, 4 moderately severe, 5 less severe, 6 very less severe



### 3.2 Discussions

Table 2 provides a clear breakdown of the key factors that influence health and safety performance among construction sites in Jalingo, Taraba State. It focuses on six major categories: Management Activities, Incentives, Policy, Personnel, Technical, and Process Factors. Each category is accompanied by aggregate mean scores, which indicate their overall impact, as well as a Severity Index, which measures the extent to which each factor influences the effectiveness of health and safety performance. One of the key takeaways from the table is that process factors have the highest aggregate mean score of 4.326, underscoring their crucial role in shaping health and safety performance. Factors like identifying hazards, conducting risk assessments, and implementing standardized work procedures are essential in minimizing risks on construction sites. The high severity index for process factors further highlights their importance, confirming that they have the greatest influence on safety performance. Technical factors come in close behind, with a mean score of 4.123. This highlights the importance of technical aspects like ensuring workers have access to appropriate personal protective equipment (PPE), effective risk management systems, and proper technical planning. The significant impact of these elements suggests that without strong technical oversight, safety on construction sites could be compromised. Policy factors also show a high aggregate mean of above 4. This emphasizes the need for clear, well-structured safety policies. When safety policies are well written, easy to understand, and based on high standards, they play a major role in guiding safe work practices and ensuring workers adhere to safety regulations. The severity index for policy factors reinforces this, suggesting that strong policies are key to reducing workplace accidents. Management activities and personnel factors, both with an aggregate mean of 3.97, also play an important role. This suggests that management's efforts in conducting safety inspections, enforcing regulations, and ensuring workers receive the necessary safety training are essential in promoting a safe working environment. Additionally, workers' attitudes and the commitment of supervisors to lead by example have a positive influence on health and safety performance. Incentives, though still important, have a slightly lower aggregate mean of 3.7. This indicates that while incentives such as monetary rewards, non-monetary recognition, and disciplinary actions do contribute to encouraging safe work practices, their impact may not be as significant as other factors like process and technical

considerations. In summary, the severity index rankings align with the mean scores, with process and technical factors being the most critical in influencing health and safety performance. This suggests that by focusing on improving process and technical elements, alongside solid management and policy frameworks, construction sites in Jalingo, Taraba State can achieve much better health and safety outcomes.

### 4.0 Conclusion

This work has provided a thorough understanding of health and safety performance among construction sites in Jalingo, Taraba State. Through a detailed needs assessment and stakeholder engagement, the paper identified key health and safety challenges in the region. Health and safety performance on construction sites is shaped by a multitude of factors, from management's actions to personnel attitudes and technical processes. By focusing on these key areas—management activities, incentives, policy formulation, personnel management, technical oversight, and process standardization—construction companies can significantly reduce accidents and injuries. Each element plays an integral role in creating a culture of safety and efficiency, and when addressed comprehensively, they foster a safer work environment for everyone involved.

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