WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

Effective Safety Management in Building Construction Sites: An Assessment of Safety Practices in Selected Sites in Benin City.

Ealefoh Dominic Ebhodaghe[1] and Otobo Victor[2]

[1]Department of Building Technology National Institute of Construction Technology and Management Uromi, Edo State. d. ealefoh@nict.edu.ng
[2]Department of Architectural Technology National Institute of Construction Technology and Management Uromi, Edo State. v.otobo@nict.edu.ng

ABSTRACT

The study investigates the attitude of construction firms operating within Benin City. towards the Effective Safety Management in Building Construction Sites: An Assessment of Safety Practices in Selected Sites in Benin City. In achieving these objectives Investigatory Survey Research Approach Method were adopted and used in order to obtain quantitative and qualitative data. Questionnaires were distributed to various construction companies within Benin City. From the analysis the result revealed that there is negligence in the attitude of construction companies towards safety and stricter regulations have to been enforced.

Keywords: *Safety Management, Selected Site, Building Construction.*

Introduction

Effective safety management in building construction sites involves putting into place and maintaining procedures, policies, and practices that ensure the health and safety of all stakeholders and workers (both artisans and professionals). Again, effective safety management in building construction sites is important for reducing accidents, ensuring compliance with safety regulations and precautions, and fostering a culture of safety within the industry.

In the interim, challenges persist, particularly in addressing human factors such as worker attitudes and behaviors, as well as implementation barriers like cost and resistance to change. The literature emphasizes the need for a comprehensive approach that integrates advanced technologies with effective communication, robust safety policies, and continuous improvement programs.

According to Kumar Vishnu (2014) discovered that Jobsite safety management alludes to the cyclic procedure of planning, executing and looking into, control of work and manpower to decrease the accidents.

Also, safety management is critical in the construction industry as a result to its high-risk nature. This project aims to explore current safety management practices, evaluate their, propose strategies for improvement and effectiveness. The research will focus on training programs, and addressing common challenges in safety management. According to Young et al., (2021). Even the integration of big data and the Internet of Things (IoT) for continuous safety monitoring and data-driven decision-making is discussed in research by Wang et al. (2018). Huang et al., (2019) mentioned that recent studies now focus on the implementation of continuous improvement programs that use feedback loops and performance metrics to enhance safety practices which is known as Continuous Improvement Programs.

As at 2017 there were a development of smart personal protective equipment (PPE) equipped with sensors to monitor environmental conditions and worker vitals is highlighted in research by Teizer et al. (2017). And the use of BIM for safety planning and management is extensively studied. Zhao et al. (2018) explores the application of BIM for hazard identification and safety planning throughout the construction lifecycle, A proactive safety management system has the core attributes of systematic identification of hazards, assessment and control of risks, evaluation and effective implementation of risk control measures. The integration of health and safety measures in to the total quality management system within the construction sector could significantly contribute to cost efficiency, quality assurance, environmental sustainability and better employer-employee relationship (Okolie and Okoye, 2012). The adoption of health and safety management system demonstrates in practical terms the readiness of any organization to bring to minimum the frequency and severity of accidents, ill health and damage to property. Health and safety management system therefore highlights and emboldens the awareness of responsibilities and aspects of occupational safety and health as well as the impact of health and safety standards on the performance of organizations. Diugwu et al. (2012) is of the view that the potency of health and safety management system depends on the existence of functional health and safety laws which guarantees the health, safety and welfare of workers and visitors. Digwu et al., (2012) further observed that there is a serious gap in health and safety management in Nigeria due largely to dysfunctional laws causing apparent lack of regulations which conforms with the assertion of Idoro (2011) that the country is lacking requisite statutory occupational health and safety laws, reiterating that even those in force are skeletal in nature and non-functional. Olutuase (2014) also concluded that the existing safety management system is poorly organized and characterized

by ineffective and poor documentation. This is further demonstrated by the frequency of number of accidents being recorded by construction companies (Olutuase, 2014).

In management of safety, one needs to execute a project that goes their life cycle of design before the procurement to ensure safety in all phases of construction Behavioral safety theory was focused on modifying worker behaviors to enhance safety. According to Geller (1996) who emphasizes the importance of positive reinforcement and behavior-based safety (BBS) programs. (Oyedeiran, 1989). Execution is supported by correlation; some of these correlations were by organizations such as Independent Project Analysis (IPA).

Materials and Methods

The method begins construction management for which practical data was developed on the subject matter. Data were collected with the aid of well-structured questionnaires. The data from the questionnaire was analyzed based on software Statistical Package for Social Science.

The table below presents the responses obtained from the completed questionnaire. A total number of One hundred (100) questionnaire were distributed but seventy (70) were completely retrieved which represents the response rate of 70%.

Table 1: Distribution of Respondents According to Sex

Sex	Frequency	Percentage
Male	70	70%
Female	30	30%
Total	100	100%

Source: Field Survey (2025)

The table1 showed that there are 70 respondents representing 70% were males, while 30 respondents are representing 30% were females. Then concluded that Males are more in the population of study.

Table 2: Distribution of Respondents According to Marital Status

Sex	Frequency	Percentage
Married	57	57%
Single	23	23%
Total	100	100%

Source: Field Survey (2025)

The table 2 showed that 57 respondents were representing 57% married while 23 respondents were representing 23% single.

Table 3: Distribution of Respondents According to Job title

Title	Frequency	Percentage
Builder	45	45%
Architect	30	30%
Civil Engineer	10	10%
Other	5	5%
Total	100	100%

Source: Field Survey (2025)

The table above showed that 45 respondents were representing 45% were builders, 30 respondents representing 30% were architect, 10 respondents representing 10% were civil engineers, and the remaining 5 representing 5% where from other job titles. Then concluded that builders were more in the population.

Table 4: Distribution of Questions Regarding Construction Risks Inherent in Building Construction Industry

Actions	Frequency	Percentage
Agree	50	50%
Disagree	35	35%
Neutral	15	15%
Total	100	100%

Source: Field Survey (2025)

The table above showed that 103 respondents, represented by 61% agreed that falls often occurs in building construction site. 4 respondents were neutral while 63 respondents represented by 37%. It was agreed that falls often occurs as an inherent risk in building construction site.

Table 5: Lack of communication is one of the challenges in the management of health and safety in construction sites

Actions	Frequency	Percentage
Agree	45	45%
Disagree	31	31%
Neutral	24	24%
Total	100	100%

Source: Field Survey (2025)

The table 5 showed that a total of 45 respondents represented by 45% agreed that lack of communication is one of the challenges in the management of health and safety in construction sites. While a total 31 respondents represented by 31% disagreed.

Table 6: High turnover is a challenge facing the management of health safety in construction sites

Actions	Frequency	Percentage
Agree	50	50%
Disagree	47	47%
Neutral	3	3%
Total	100	100%

Source: Field Survey (2025)

The table 6 above showed that a total of 50 respondents represented by 50% agreed that there were virtual inspections of construction sites through either a Zoom or a Microsoft Teams video calls between engineers on site and building control officials. While a total 47 respondents represented by 47% disagreed. We can say that there were virtual inspections of 3 construction sites through either a Zoom or Microsoft Teams video calls between engineers on site and building control officials.

Test of hypotheses

Test of hypothesis was done using Chi-square technique. The technique used for the statistical data collection to answer questions with the aid of statistical models is known as hypotheses test. Each opinion is posed on a null hypothesis (Ho) and the alternative hypothesis (Hi). The significance level of 0.05 which signifies that only 0% probability of output occurred by chance.

Hypothesis

Ho: There were no risks in the building construction industry

Hi: There were risks in the building construction industry

Table 4,5 and 6 were used for testing hypothesis.

Table 7

Options	Number of Response			
Question	1	2	3	**Total**
Agree	50	45	50	145
Disagree	35	31	47	113
Neutral	15	24	3	42
Total	100	100	100	300

Source: field survey 2022

Expected frequency = (column total) Row total

Grand total

The expected frequencies are obtained as follows

R1C1 = 100x145 =48.3

300

R2C1 = 100x113 = 37.7

300

R2C1 = 100x42 = 15.0

300

Table 8: Computation of Chi-square.

Oi	Ei	Oi-Ei	(Oi-Ei)^2	**(Oi-Ei)^2 / Ei**
50	48.3	1.7	2.7	0.0560
45	48.3	-3.3	-9.9	-0.2050
50	48.3	1.7	2.89	0.0598
35	37.7	-2.7	-5.4	-0.1432
31	37.7	-6.7	-13.4	-0.3554
47	37.7	9.3	81.9	2.1724
15	15.0	0	0	0
24	15.0	9.0	81	5.4000
3	15.0	-12	-24	1.6000
TOTAL				**8.5846**

Source: field survey 2025

The degree of freedom is determine from the contingency table df= (R-1)(C-1)

df= (5-1) (5-1) = 16 degree of freedom

= 4x4= 16

The test of significance is conducted at 5% level.

Decision

From the Chi-square the critical value at 16 degree of freedom and 5% of significance 26.30

The computed value is 8.5846 which are greater than critical value of 26.30. Therefore the null hypotheses are rejected while the alternate hypothesis is accepted. It is therefore concluded that there are inherent risks in the building construction industry.

Conclusion

In conclusion drawn from the research on the Effectiveness of Safety Management on building construction sites in Benin City. Was based on the findings discussed in Chapter Four, recommendations for improving the Effectiveness of Safety Management in the construction industry are provided. To achieve this, construction companies prioritized safety by providing necessary equipment, conducting regular training, and adhering to industry regulations. Additionally, the government and relevant regulatory bodies need to strengthen the implementation of Effectiveness of Safety Management in the construction industry-laws in the construction industry, ensuring that violations are met with appropriate penalties.

Recommendation

These recommendations are targeted at construction companies, regulatory bodies, and workers to help enhance the safety and well-being of individuals on site. while there is a moderate level of awareness about Effectiveness of Safety Management, significant gaps remain in compliance and enforcement. Both contractors and workers have a shared responsibility to improve adherence to safety regulations

The following recommendations are made to improve the Effectiveness of Safety Management on construction sites in Benin City.

1. Encouraging Worker Participation in Safety Practices:

Workers were encouraged to participate actively in promoting safety on construction sites. Which can be achieved by establishing safety committees where workers can voice their concerns, suggest improvements, and engage with management on safety issues. Workers' feedback provided valuable insights in the practical challenges they face on-site.

1. Ensuring the Availability and Use of PPE:

Construction companies were making availability of PPE (helmets, gloves, safety harnesses, etc.) mandatory for all site workers and enforce its usage at all times. Supervisors were regularly inspected to ensure it was in good condition and being used properly. Contractors were also budget for adequate PPE to eliminate excuses related to cost-saving.

2. Availability of safety materials by contractors:

Contractors made the provision for safety, the costs for personal protective equipment’s measures explored and explicitly part of tendering and costing for the project implementation.

Reference

Geller, E. S. (1996). The Psychology of Safety: How to Improve Behaviors and Attitudes on the Job. CRC Press.

Huang, X., et al. (2019). Continuous improvement in construction safety: A framework and case research. Safety Science, 116, 1-9.

Olutuase, S. (2014). The impact of Effective Safety Management on worker performance in construction projects. International Journal of Occupational Safety, 22(5), 300-318.

Teizer, J., et al. (2017). Smart PPE: Sensor technology to improve construction safety. Safety Science, 93, 50-62.

Wang, J., et al. (2018). Big data and IoT in construction safety management: A review. Safety Science, 109, 403-415.

Young, A., et al. (2021). Exoskeletons in construction: Evaluating the impact on worker safety and productivity. Journal of Construction Engineering and Management, 147(5), 04021030.

Zhang, X., et al. (2021). Implementation barriers to advanced safety technologies in construction. Safety Science, 133, 104989.

Zhao, D., et al. (2018). Building Information Modeling for safety management: Applications and challenges. Safety Science, 109, 174-186.