

# Developing an Effective Strategy for Mitigating Accidents in Building Construction Sites

Emmanuel Taye ThanksGod<sup>1\*</sup>, Olowolayemo Oluwaseun Ebenezer<sup>1</sup>, Williams Opeyemi Samuel<sup>1</sup>, Popoola Martins Olugbenga<sup>1</sup>, Awosusi Abiodun Racheal<sup>1</sup>

Department of Quantity Surveying, Rufus Giwa Polytechnic, Faculty of Environmental Studies, Owo. NIGERIA  
E-mail: olowoseuneben@gmail.com

**Abstract**—Accidents have a negative impact on construction sites and, if unaddressed, can result in death, injury, or disability. Therefore, the strategies in minimizing the accident on building construction site. This study collected data through the use of structured questionnaires that were administered to registered professionals in Ondo State. The target population comprises of Quantity Surveyors, Architects, Builders, and Structural Engineers. Eighty-three (83) questionnaires were administered; and sixty-nine (69) were retrieved from professionals. The data retrieved were analyzed using descriptive statistics. Mean score response analysis frequency and percentages. According to the findings of the study, there are three main approaches that can effectively reduce the effects of accidents on construction sites for buildings. First and foremost, it emphasized the significance of establishing safe working conditions through the use of appropriate equipment, adequate instruction, and stringent safety procedures. Second, the study argued that employee participation in safety programs should be encouraged because workers play a crucial role in identifying and dealing with potential hazards. This involvement encourages collective responsibility for accident prevention and fosters a culture of proactive safety awareness. Last but not least, the study emphasized the importance of experience-based operations, recognizing the significance of accumulated knowledge and expertise in reducing risks and improving safety outcomes. These methods, taken together, offer a comprehensive strategy for reducing the effects of accidents on construction sites, ultimately leading to a safer workplace. In light of the review's discoveries, it is suggested that building construction site stakeholders should focus on the execution of exhaustive wellbeing measures. This includes making and keeping safe working conditions by making sure that the right tools are used, enough training is given, and safety rules are followed very strictly. Additionally, fostering a culture of proactive hazard identification and prevention and employee participation in safety programs can significantly improve overall safety outcomes. It is also possible to further contribute to the reduction of risks and enhancement of safety by valuing and making use of the expertise and experience of workers. Construction sites can effectively reduce the effects of accidents and create a safer environment for all involved workers by implementing these recommendations.

**Keywords**— Strategy, minimizing, accident, building construction sites, safe working conditions.

## I. INTRODUCTION

Lack of knowledge, non-compliance with guidelines and regulations, non-use of Personal Protective Equipment (PPE), risky behavior, and negligence are all factors that can lead to accidents in the construction industry (Ndekugri and Corbett, 2004). According to Olubunmi (2012), development projects

in Nigeria frequently result in accidents. Nigeria is with a populace of in excess of 188 million individuals (Public Populace Commission, 2016), has in excess of a couple of kinds of building associations that supply various sorts of drives and recruit numerous people (Kadiri, Nden, Avre, Oladipo, Edom, Samuel (2014), Regardless of the accessibility of rules and their execution, the structure locale is by the by venture in big quantities of business related mishaps which have prompted numerous wounds and occasionally fatalities. The circumstance is graver in making countries like Nigeria, where the thoughtfulness regarding the ideal execution of wellbeing and security in spite of the accessibility of rules and their execution, the structure locale is by and by venture in big quantities of business related mishaps which have prompted numerous wounds and occasionally fatalities.

Failure to identify a hazardous condition that exists prior to or after the start of an activity, lifting on a work in a hazardous condition, and learning to function despite hazardous site conditions are the three primary causes of accidents. Accidents in the construction industry occur as a result of unsafe actions and conditions. As a result of management's failure to anticipate issues like training, maintenance, and instruction, unsafe conditions and dangerous behaviors are the primary causes of accidents (Kheni, Gibb, & Dainty, 2010). The absence of laws and regulations that govern the works of industry contributes to the rising number of accidents in construction projects.

## II. LITERATURE REVIEW

*Strategy for minimizing accident in building construction Sites.*

The construction industry is responsible for over 317 million fatal accidents worldwide (International Labor Office, 2013). According to Alhajeri (2011), one of the factors that contribute to development accidents is a lack of cooperation and teamwork, not adhering to working procedures, a low level of technical know-how, non-compliance with security acts by employees, and a lack of technical knowledge. 2013 Bashir) According to Hughes and Ferrett (2011), other common causes of accidents include falling from a high building or structure, being struck by a crane tower's resource of any falling or moving object, colliding with moving vehicles, putting an ordinary or stationary object, and slipping, tripping, and falling.

Accidents do indeed occur for a variety of reasons. Bashir (2013) differentiates between onsite and offsite causes of accidents, whereas Zailani (2012) highlights the two categories of: 1) episode Event (for example slips, excursions and falls) versus 2) prompt causes, (for example, the use of gear inappropriately, presently not the utilization of PPE (Individual Insurance Hardware).

Wellbeing alludes to the security of our bodies and psyches of people from disorder following from materials, cycle or legal disputes utilized in the work environment though security is assurance of individuals from actual mischief (Hughes and Ferret, 2008). According to the preceding definition, the government intended to establish a Health and Safety (H2.8.8 Health and Safety Commission) composed of consultants from the business and local authority to assume responsibility for developing departmental policies.

Wellbeing examiners should be selected by government and ought to be given energy to enter, at any reasonable time, any premises which they have intention to acknowledge as obvious with it is key for him to enter to complete any of the jail arrangement inside the filled of responsibility of his carrying out power. The accident surveillance device and inspections of accidents, as demonstrated by Ergo (2003), are restricted to serious accidents that result in death, organ loss, or prolonged hospitalization. However, the primary drawback of this device is that most reporting is performed by significantly larger businesses in the formal sector.

Enforcement in the event that an inspector discovers a violation of any decree provision, he may issue a prohibition notice instructing the undertaking, in the event that there is a risk of serious personnel injury, to cease giving rise to this risk until the corrective action outlined in the note has been taken. The prohibition notice may be issued regardless of whether there is a legal violation, and it may take effect immediately or at a later time. It may be served on the individual who is in charge of the undertaking or on a person as per Taiwo (2011) the Town Arranging Authority is burdened with the obligations of observing and controlling all land advancements, task of sketch endorsement draws near and preparing design plans. Due to a lack of political will, the existing building codes, guidelines, and regulations that were intended to guide builders were rendered ineffective.

Training, Supplies, and Procedures for First Aid in accordance with the Occupational Health and Safety (OHS) regulation of 2001, every workplace must have a first aid kit. First asset gives the starter and on the spot help to a man or lady who is experiencing a harm and furthermore prevent the injury from turning out to be more terrible. In the workplace, employers are required to provide a first aid station that is always accessible. By nature, development necessitates travel, and in the same way that time is money in development, additional travel is wealth. As a result, training typically includes mandatory topics like emergency scene management, extreme bleeding, and rescuer experienced operators. Watts and William A 1980) thought that security feel is a mix of presence of mind, training and ride, the newbie to site will presumably have the principal product, a tad bit of the second and through definition, none of the third, expansion kept up

with that specific fundamental safeguards like the wearing of security boots and caps are self-evident, in any case, others the spotting, evasion and revision of traps in platform can maybe, just be found through experience. Unfortunately, many contracting businesses have avoided employing operatives due to a love of profits. In an effort to increase profits, contract labor has become common.

Notwithstanding the explanation of taking on SSM idea, the strain toward extended efficiency, asset saving and even benefit boost need to advance insurance contracts that will rouse organizations in the structure district to keep up with their agents Zakeri, (1996).

Proper Project Planning During the pre-planning phase of a project, building plans and methods are taken into consideration. The security strategy plans and working strategies statement cannot be separated from these activities. On the setting of issues contained, pre-delicate techniques, task plans and following projects are the equivalent with „safety approach plans“. In any case, with regards to theory and goals, they are isolated records, deviations are dangerous signs of inconsistency, disarray and troubles of execution. Security technique sketch contacts quintessential issues on an undertaking subsequently, its definition, training and execution lays on adequate task arranging Aziz, (2013). Adequate safety regulations The provision of security devices on sites has been the common perception of safety. Even the provision of these tools is frequently left up to the contractor, who doesn't consider it a cost because they don't know much about construction.

### III. RESEARCH METHODOLOGY

A few of the many factors that determine the success of each method of data collection include the identification of pertinent and attainable respondents, the organization and description of the appropriate sampling frame, the manner in which fieldwork is carried out, and, finally, the manner in which the gathered statistics are received, encoded, processed, and analyzed. This data was gotten from the essential and most critical source. Claybaugh and Zach (2020) say that the study was done on a building construction site in Ondo State, Nigeria. The primary data were a well-organized questionnaire and a personal statement made before the visit. The obtained significant information would be examined using the fact bundle for sociologies. Five strategies of descriptive facts had been used for the random analysis. These are percentile; imply item score, relative importance index. Sample sizes have been determined and respondents have been identified. Non-chance methods was adopted whilst eighty-three (83) official questionnaires had been administered amongst the building stakeholders working on a development web sites in the study area, these include the Quantity surveyors, Architects, Engineers and Builders with a retrieval of sixty-nine (69). Frequency and percentage had been used to analyze the demographic information of the respondents

### IV. FINDINGS AND DISCUSSION

Total quantity of eighty-three (83) copies of questionnaires had been administered to Architects, Quantity surveyors,

Building Contractors, Skilled labours, Unskilled labours, professionals, and others in the study area. Retrieved had been sixty -nine (69) copies that were used for the analysis. This represents a response rate 83.13%

The findings also give a reasonable response from respondents that this are the strategies for minimize the effects of accidents base on the rank development of safe working conditions, promotion of employee participation in the safety program, experience operative, encouraging workers to participation in safety program and continuous education and training safety.

Table 1: Distribution of questionnaires

Questionnaires	Frequency	Percentage
Number distributed	89	100
Complete no of return	69	83.13
Number not returned	14	16.86

Source: Author (2023)

Table 2 below shows the year of experience of the respondents, 1-5 years of 2.9%, 6-10years of 21.7%, 11-15years of 27.5 %, 16- 20 years 39.1%, 20years above 8.7% The majority of the respondent’s working experience is between 16-20 years which is 39.1% while the minority of the respondent’s working experience is 1-5 which is 2.9%

The working experience of the respondents is important and supports the fact that they are knowledgeable and capable of providing the much needed professional judgment required for the credibility of the data collected for the research.

Table 2: Years of experience in the construction industry

Classification	Frequency	Percentage
1-5YRS	4	2.9
6-10YRS	13	21.7
11-15YRS.	19	27.5
16-20YRS	27	39.1
Above 20YRS.	6	8.7
TOTAL	69	100

Source: Author (2023)

Table 3 shows that ND holders representing 6%, HND representing 32%, BSC represent 19%, PGD representing 19%, MSC representing 15% and PhD representing 10%. The highest majority is the HND holders followed by the PGD holders.

Table 3: Academic Qualification of Respondents

Education background	Frequency	Percentage%
ND	4	5.8
HND	22	31.9
BSc.	13	18.8
PGD	13	18.8
MSc.	10	14.5
PhD	7	10.0
<b>Total</b>	<b>69</b>	<b>100</b>

Source: Author (2023)

Table 3 shows that out of Sixty-nine (69) respondents, Four (4) of respondents are ND holders representing 5.8%, Twenty-two (22) of respondents are HND representing 31.9%, Thirteen (13) of respondents are BSc. representing 18.8%, thirteen (13) of respondents are PGD representing 18.8%, Tenth (10) of respondents are MSc. representing 14.5% and

Seven (7) respondents are PhD representing 10.0%. The highest majority is the HND holders followed by the PGD holders.

Table 4 shows the professionals cadre of respondents Skilled labours 27.5%, unskilled labours 29%, Professionals 30%, Visitors 4.3% and Contractors 21.7%

Table 4: Category of Workers

Category of workers	Frequency	Percentage
Professionals'	30	43.5
Unskilled	2	29
Skilled labour	19	27.5
Visitors	3	4.3
Contractor	15	21.7
<b>Total</b>	<b>16</b>	<b>100</b>

Source: Author (2023)

Table 5 below shows the type of project involved by the respondents Residential building 36%, Commercial building 36%, Educational building 36% and Institutional building 13%.

Table 5: Types of project involved

Type of project	Frequency	Percentage
Residential building	25	36.2
Commercial building	25	36.2
Educational building	6	8.7
Institutional building	9	13.00
Total	69	100

Source: Author (2023)

*Strategies for minimizing accidents in building construction site*

Table 3 shows the analysis of Table 6 shows the analysis of strategies to minimize the effect of accident on construction site. Regarding the data in the table, the highest mean score is 4.55 which is the highest mean score development of safe working condition, promotion of employee participation in safety program, experience operative with 4.28 rank 3rd ,encouraging worker to practice health and safety in all aspect of their activities, continuous education and training on safety with 4.25 rank 5th, site planning must be entail with 4.22 rank 6th ,materials and equipment inspection by qualified person with mean score 4.21 rank 7th position, adequate safety knowledge with mean score 4.20 rank 8th position, law enforcement with mean score 4.19 rank 9th position, proper job placement with mean score 4.19 rank 10th position, adequate safety regulation with mean score 4.16 rank11th position, enforcement of safety rules with mean score 4.16 rank 11th position, adequate insurance policies on construction risk with mean score 4.13 rank 12th position, safety campaign with mean score 4.13 rank 12th position, adequate safety doctrinarian and on the job training with mean score 4.13 rank 12th position, first aid training among the workers with mean score 4.12 rank 13th position, evaluation for promotion and salary with mean score 4.10 rank 14th position, increase in term of safety warning sign with mean score 4.10 rank 14th position, daily safety contact by the supervisor with mean score 4.10 rank 14th position, proper project planning with mean score 4.07 rank 15th position, inspection of site by government with mean score 4.07 rank

15th position, recognition of physical limitation of workers newly placed on job with mean score 4.04 rank 16th position and safety suggestion with mean score 3.98 rank 17th position.

Table 6: Strategies in minimizing the effect of accident on building construction site

Option	Mean score	Ranking
Development of safe working condition	4.55	1 <sup>st</sup>
Promotion of employee participation in the safety programmed	4.43	2 <sup>nd</sup>
Experience operative	4.28	3 <sup>rd</sup>
Encouraging worker to practice health and safety in all aspect of their activities	4.28	4 <sup>th</sup>
Continuous education and training.	4.25	5 <sup>th</sup>
Site planning must be entails	4.22	6 <sup>th</sup>
Materials and equipment inspection by qualified person	4.21	7 <sup>th</sup>
Adequate safety knowledge	4.20	8 <sup>th</sup>
Law enforcement	4.19	9 <sup>th</sup>
Proper job placement	4.16	10 <sup>th</sup>
HiAdequate safety regulation	4.16	11 <sup>th</sup>
Enforcement of safety rules	4.16	12 <sup>th</sup>
Adequate insurance policies on construction	4.13	13 <sup>th</sup>
Safety campaign	4.13	14 <sup>th</sup>
Adequate safety in doctrinarian and on the job safety training	4.13	15 <sup>th</sup>
First aid training among the workers	4.12	16 <sup>th</sup>
Evaluation for promotion and salary increase in term of safety.	4.10	17 <sup>th</sup>
Warning sign	4.10	17 <sup>th</sup>
Daily safety contact by the supervisor	4.10	17 <sup>th</sup>
Proper project planning	4.07	20 <sup>th</sup>
Inspection of site by government	4.07	20 <sup>th</sup>
Recognition of physical limitation of workers newly placed on a job	4.04	22 <sup>nd</sup>
Safety suggestion box		

Source: Author (2023)

### V. CONCLUSION

According to the findings of the study, there are three main approaches that can effectively reduce the effects of accidents on construction sites for buildings. First and foremost, it emphasized the significance of establishing safe working conditions through the use of appropriate equipment, adequate instruction, and stringent safety procedures. Second, the study argued that employee participation in safety programs should be encouraged because workers play a crucial role in identifying and dealing with potential hazards. This involvement encourages collective responsibility for accident prevention and fosters a culture of proactive safety awareness. Last but not least, the study emphasized the importance of experience-based operations, recognizing the significance of accumulated knowledge and expertise in reducing risks and improving safety outcomes. These methods, taken together, offer a comprehensive strategy for reducing the effects of accidents on construction sites, ultimately leading to a safer workplace.

### VI. RECOMMENDATION

In light of the review's discoveries, it is suggested that building construction site stakeholders should focus on the execution of exhaustive wellbeing measures. This includes making and keeping safe working conditions by making sure that the right tools are used, enough training is given, and safety rules are followed very strictly. Additionally, fostering a culture of proactive hazard identification and prevention and employee participation in safety programs can significantly improve overall safety outcomes. It is also possible to further contribute to the reduction of risks and enhancement of safety by valuing and making use of the expertise and experience of workers. Construction sites can effectively reduce the effects of accidents and create a safer environment for all involved workers by implementing these recommendations.

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