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Assessing the Effectiveness of Accident Prevention Strategies in Minimizing Occurrences of Building Construction Site Accidents

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Abstract

Building construction workers are prone to accidents because the construction industry is considered one of the most hazardous. It is important to note that Nigeria does not have any accurate accident data. Therefore, effect of implementing strategies of accident prevention method in minimizing occurrences of accident in five selected building construction site in Akure, Ondo state, Nigeria. This was with a view to implement strategies of accident prevention method in building construction site in the study area. Building construction workers, the general public, and future research will all benefit from the study. Eighty (80) valid questionnaires were administered to the respondents in selected construction sites in the study area, these include Contractor, Skilled labour, Unskilled labour, Professionals and Others with a retrieval of sixty-nine (69). Frequency and percentage were used to analyze the demographic information of the respondent while data on the effect of implementation strategies of accident prevention method in minimizing occurrences of accident in building construction site was analyzed using descriptive, mean score, and ranking. The study concluded that cost of operation rescue, increase compliance with dedication to safety, decrease time and money lost after an accident, improves safety and productivity, decrease time and money lost after an accident are the most significant effect of implementing strategies of accident prevention method in minimizing the occurrence of accident in building construction site of which it's major effect is on time. This study recommended that the implementing strategies of accident prevention method in minimizing the occurrence of accident in building construction site should be focused of all the construction stakeholders as it has major effects on time of the project.

Keywords: construction, building construction sites, minimizing, occurrence, implementation, accident prevention method.

I. Introduction

An unanticipated event that occurs without prior notice is referred to as an accident. It could take place on or off-site. Workers in the construction industry are at risk of injury because the

construction industry is regarded as one of the riskiest. Development industry stands apart from different businesses on account of fundamental arrangement of frameworks empowers public turn of events (Olarewaju and Abdul-Rashid, 2015) As per Smallwood and Haupt (2002), as they would see it said that development industry is the riskiest area of the economy contrasted with other financial areas because of the great number of losses supported during development projects everywhere. Accidents have serious financial and humanitarian repercussions for the construction industry, as is common knowledge. However, the construction industry is frequently associated with hazardous work environments (Misnan, 2009), and the construction sites are rife with accidents on a daily basis (Ehi, 2010). However, despite the fact that Nigeria is experiencing a commensurately strong growth in construction work, efforts to ensure an improvement in the safety performance of building construction sites have resulted in either little or no improvement. Accidents on construction sites frequently occur because not all building and construction industries adhere to safety standards. More development laborers experience medical affliction or winds up dead than other industry (European Office for Wellbeing and Wellbeing at Work, 2004). However, it is heartbreaking to learn that despite every effort to improve health and safety in the Nigerian construction industry, the number of accidents on construction sites, both unreported and reported, continues to rise. According to Ayininuola and Olalusi (2004), the majority of building failures are the result of health and safety standards and bylaws not being enforced or not being in place at all. It is appropriate to have the discernment of the way that when mishap occurs on the structure building site (BCS), it brings about hardware harm, loss of lives and appendages, upset work program, over consumption and loss of project workers' picture. this study is engaged o the execution of mishap anticipation the executives in building site. The Preventive measures with this impact will be that suitable insurances will be taken to guarantee that all work places are protected. As a result, the purpose of this paper is to investigate how accident prevention strategies reduce accidents on construction sites: a case study of the state of Ondo in Nigeria's southwest

II. Literature review

Effect of implementation strategies of accident prevention method in minimizing occurrences of accident in building construction site.

The significance of reconciliation of OSH programs in development projects Hämäläinen, Takala and Saarela (2005) express that the quantity of mishaps rates will raise simultaneously with the expansion in industrialization in nations, which will straightforwardly influence the personal satisfaction of development laborers. In addition, accidents are becoming more common in construction projects due to a lack of laws and regulations (Kheni, Gibb, and Dainty, 2010). This highlights the significance of incorporating occupational safety and health (OSH) plans and programs into construction projects in order to reduce, eliminate, or prevent occupational risks in construction activities (Hinze, 2000). According to Umeokafor, Isaac, Jones, and Umeadi (2014), unemployment has caused workers to disregard safety procedures and accept risky jobs. poor site management, harsh work operations, low workers' knowledge and skill levels, failure to use personal protective equipment (PPE), and poor workers' attitudes regarding safety are all factors that contribute to unsafe conditions on the job site. Some of the obstacles to the implementation

of accident prevention strategies on construction sites (Abdul and Muhd, 2008) are listed below. In building site worldwide specialists hope to have the option to work in a no problem at all climate for good efficiency yet mishap occurring nearby are on avoidable. Both the personnel's and the structure's safety are critical to the success of a construction project (Kanchana, 2015). The global trade union federation puts the number much higher at 108,000, with construction accounting for 30% of all work-related accidents. The International Labor Organization (ILO) estimates that at least 60,000 fatal accidents occur annually on construction sites worldwide. Special trade, civil engineering, residential building, and non-residential building are the four main components of the construction industry (Abdul-Lateef and Abdul-Aziz, 2015). In essence, a building construction site is a location where construction work is done, and it can also be referred to as a building site. The structure must be assembled and erected as part of this. This underlying material incorporates brick work, mud or log which could be utilized for encase. A structure is made up of many parts, including the beam, the frame structure, the still frame building, and many others.

III. Research methodology

The identification of suitable and potential respondents, the selection of the appropriate sampling frame, the manner in which fieldwork is carried out, and, finally, the manner in which the data collected is received, encoded, processed, and analyzed are just a few of the many factors that determine the process's success (Creswell, 2009; Yin, 2009). This study used data from both primary and secondary sources. Essential information was through a very much organized survey and individual perception made during appearance to the structure building webpage as well as meeting of diaries and sites for the optional information. Because of this, the study only included five construction sites in Akure, Ondo state, Nigeria. The building locales were chosen arbitrarily inside Akure in Ondo State. Respondents were identified and sample sizes were determined.

IV. Findings and discussion

Total number of eighty (80) copies of questionnaires were administered to Contractor, Skilled labour, Unskilled labour, professionals, and others in the study area. Retrieved were sixty -nine copies that were used for the analysis. This represents a response rate 86.25%.

Table one below is the number of questionnaires received from different building construction site that made up the population.

Table 1: Questionnaire distributed and retrieved.

Number distributed	Number retrieved	Rate of return (%)
80	69	86.25

Source: Author (2023)

Table 2: showing the demographic characteristics of the respondent. The year of experience of the respondent varies from 1-20 years' respondents within 1- 5 years of experience were 39.1%,

while respondents between 5-10 years of experience had 33.3% of the respondent, respondents between10-20 years were 20.3% and lastly 20 years and above experience were 7.2%.

Table 2: Years of experience in the construction industry

Category	Frequency	Percentage%
1 -5yrs	27	39.1
5-10yrs	23	33.3
10-20yrs	14	20.3
20-above	5	7.2
Total	**69**	**100**

Source: Author (2023)

Table 3 shows that out of 69 respondents, 23 of the respondents are ND holders representing 3.3%, 14 are HND holders representing 20.3%, 21 are BSC holders representing 30.4%, 3 are PGD holders representing 4.3%, 2 are MSC holder representing 2.9% and 6 are PHD holders representing 8.9%. The highest majority is the ND holders followed by the HND holders

Table3: Academic qualification of respondents

Education background	Frequency	Percentage%
ND	23	33.3
HND	14	20.3
BSC	21	30.4
PGD	3	4.3
MSC	2	2.9
PHD	6	8.9
Total	**69**	**100**

Source: Author (2023)

Table 4 below it depicts that out of the total number of the respondents seven (7) are contractors and represents 10.1%, 27 skilled labours with 39.1% representation,19 of unskilled labour representing 27.5%, 15 professionals representing 21.7% and the other is 1 representing 1.4%. Majority of the respondents are skilled labour which has 39.1% which is then followed by the unskilled labour of 27.5%.

Table 4: Area of work specification

Category of Workers	Frequency	Percentage%
Contractor	7	10.1
Skilled Labour	27	39.1
Unskilled Labour	19	27.5
Professionals	15	21.7
Others	1	1.4
Total	69	100%

Source: Author (2023)

Table 5 below depicts that most of the respondents agreed that cost of operation rescue, optimize productivity and safety on construction sites protects the public, decrease time and money lost after an accident, increase compliance with a dedication to safety and high morale to work, safety reduces work-related accidents and it improves economic growth, accident is completely avoidable, increased motivation, improve employee performance, improves quality and productivity, reduced workers compensation claims and cost, no health defect in hearing, improves safety and productivity, no hazard will be recorded, increased productivity, commitment to the project, improve external image and brand, decreased employee premiums and no loss of human life are the effect of implementing strategies of accident prevention method in minimizing the occurrence of accident in building construction site on cost.

Table 5: Effect of implementing strategies of accident prevention method in minimizing the occurrence of accident in building construction site (Cost).

	N	Minimum	Maximum	Mean	Ranks
Cost of operation rescue	69	1	5	4.59	1st
Optimize productivity	69	3	5	4.54	2nd
Safety on Construction Sites Protects the Public	69	2	5	4.54	2rd
Decrease Time and Money Lost After an Accident	69	2	5	4.52	3th
Increase Compliance with a Dedication to Safety	69	1	5	4.45	4th
High morale to work	69	1	5	4.45	4th
Safety Reduces Work-Related Accidents	69	2	5	4.41	5th
It improves economic growth	69	1	5	4.41	5th
Accident is completely avoidable	69	2	5	4.36	6th
Increased motivation	69	2	5	4.33	7th

Improve employee performance	69	2	5	4.33	7th
Improves quality and productivity	69	2	5	4.32	8th
Reduced workers compensation claims and cost	69	1	5	4.30	9th
No health defect in hearing	69	1	5	4.28	10th
Improves safety and productivity	69	2	5	4.28	10th
No hazard will be recorded	69	2	5	4.28	10th
Increased productivity	69	1	5	4.28	10th
Commitment to the project	69	2	5	4.25	11th
Improve external image and brand	69	1	5	4.23	12th
Decreased employee premiums	69	1	5	4.09	13th
No loss of human life	69	1	5	4.01	14th

Source: Author (2023)

Table 6 below shows that most of the respondents agreed that increase compliance with a dedication to safety, decrease time and money lost after an accident, it improves economic growth, safety reduces work-related accidents and safety on construction sites protects the public, high morale to work, no hazard will be recorded, increased productivity, no health defect in hearing, improves safety and productivity, accident is completely avoidable, cost of operation rescue, commitment to the project, commitment to the project, improves quality and productivity, improve employee performance, reduced workers compensation claims and cost, increased motivation, optimize productivity, improve external image and brand, decreased employee premiums and no loss of human life are the effect of implementing strategies of accident prevention method in minimizing the occurrence of accident in building construction site on time.

Table 6: Effect of implementing strategies of accident prevention method in minimizing the occurrence of accident in building construction site (Time).

	N	Minimum	Maximum	Mean	Ranks
Increase Compliance with a Dedication to Safety	69	1	5	4.68	1st
Decrease Time and Money Lost After an Accident	69	2	5	4.62	2nd
It improves economic growth	69	2	5	4.54	3rd
Safety Reduces Work-Related Accidents	69	1	5	4.52	4th

Safety on Construction Sites Protects the Public	69	2	5	4.52	4th
High morale to work	69	2	5	4.46	5th
No hazard will be recorded	69	2	5	4.43	6th
Increased productivity	69	2	5	4.36	7th
No health defect in hearing	69	2	5	4.35	8th
Improves safety and productivity	69	2	5	4.33	9th
Accident is completely avoidable	69	1	5	4.28	10th
Cost of operation rescue	69	1	5	4.28	10th
Commitment to the project	69	2	5	4.26	11th
Improves quality and productivity	69	2	5	4.23	12th
Improve employee performance	69	2	5	4.22	13th
Reduced workers compensation claims and cost	69	2	5	4.20	14th
Increased motivation	69	2	5	4.19	15th
Optimize productivity	69	2	5	4.17	16th
Improve external image and brand	69	2	5	4.13	17th
Decreased employee premiums	69	1	5	4.09	18th
No loss of human life	69	1	5	3.80	19th

Source: Author (2023)

Table7 below shows the effect of implementing strategies of accident prevention method in minimizing the occurrence of accident in building construction site on quality; decrease time and money lost after an accident, increase compliance with a dedication to safety, commitment to the project and it improves economic growth, safety reduces work-related accidents, improves safety and productivity, accident is avoidable, no health defect in hearing, high morale to work, cost of operation rescue, safety on construction sites protects the public, no loss of human life, increased motivation, improves quality and productivity, no hazard will be recorded, increased productivity, improve employee performance, optimize productivity, reduced workers compensation claims and cost, decreased employee premiums and improve external image and brand.

Table 7: effect of implementing strategies of accident prevention method in minimizing the occurrence of accident in building construction site (Quality).

	N	Minimum	Maximum	Mean	Ranks
Decrease Time and Money Lost After an Accident	69	2	5	4.57	1st
Increase Compliance with a Dedication to Safety	69	2	5	4.55	2nd
Commitment to the project	69	2	5	4.51	3rd
It improves economic growth	69	2	5	4.51	3rd
Safety Reduces Work-Related Accidents	69	2	5	4.48	4th
Improves safety and productivity	69	2	5	4.46	5th
Accident is completely avoidable	69	2	5	4.36	6th
No health defect in hearing	69	2	5	4.33	7th
High morale to work	69	2	5	4.28	8th
Cost of operation rescue	69	2	5	4.26	9th
Safety on Construction Sites Protects the Public	69	1	5	4.26	9th
No loss of human life	69	1	5	4.25	10th
Increased motivation	69	2	5	4.25	10th
Improves quality and productivity	69	2	5	4.23	11th
No hazard will be recorded	69	2	5	4.17	12th
Increased productivity	69	2	5	4.17	12th
Improve employee performance	69	2	5	4.10	13th
Optimize productivity	69	2	5	4.07	14th
Reduced workers compensation claims and cost	69	2	5	4.06	15th
Decreased employee premiums	69	2	5	4.00	16th
Improve external image and brand	69	2	5	3.99	17th

Source: Author (2023)

Table8 below showed the effect of implementing strategies of accident prevention method in minimizing the occurrence of accident in building construction site on safety; improves safety

and productivity, commitment to the project, increased motivation, increased productivity, decrease time and money lost after an accident, safety on construction sites protects the public, increase compliance with a dedication to safety, cost of operation rescue and no loss of human life, improve employee performance, improve external image, no health defect in hearing, improves quality and productivity, no hazard will be recorded, safety reduces work-related accidents, optimize productivity, accident is completely avoidable, reduced workers compensation claims and cost, high morale to work, it improves economic growth and decreased employee premiums.

Table 8: effect of implementing strategies of accident prevention method in minimizing the occurrence of accident in building construction site (Safety).

Safety	N	Minimum	Maximum	Mean	Ranks
Improves safety and productivity	69	2	5	4.38	1st
Commitment to the project	69	2	5	4.36	2nd
Increased motivation	68	2	5	4.31	3rd
Increased productivity	69	2	5	4.30	4th
Decrease Time and Money Lost After an Accident	69	1	5	4.29	5th
Safety on Construction Sites Protects the Public	69	1	5	4.28	6th
Increase Compliance with a Dedication to Safety	69	1	5	4.26	7th
Cost of operation rescue	69	2	5	4.26	7th
No loss of human life	69	2	5	4.26	7th
Improve employee performance	69	2	5	4.23	8th
Improve external image and brand	69	2	5	4.23	8th
No health defect in hearing	69	2	5	4.19	9th
Improves quality and productivity	69	2	5	4.19	9th
No hazard will be recorded	69	1	5	4.19	9th
Safety Reduces Work-Related Accidents	69	1	5	4.19	9th
Optimize productivity	69	2	5	4.17	10th
Accident is completely avoidable	69	1	5	4.16	11th
Reduced workers compensation claims and cost	69	1	5	4.16	11th
High morale to work	69	1	5	4.14	12th

It improves economic growth	69	1	5	4.06	13th
Decreased employee premiums	69	1	5	3.97	14th

Source: Author (2023)

The table below shows the effect of implementing strategies of accident prevention method in building construction site on client's satisfaction which falls into the following ranking, decrease time and money lost after an accident, it improves economic growth, safety reduces work-related accidents, safety on construction sites protects the public, high morale to work, no hazard will be recorded, increase compliance with a dedication to safety, commitment to the project and increased productivity, increased motivation, no health defect in hearing, accident is completely avoidable, improves safety and productivity, improve employee performance, improves quality and productivity, decreased employee premiums, cost of operation rescue, no loss of human life, improve external image and brand, optimize productivity and reduced workers compensation claims and cost.

Table 9: effect of implementing strategies of accident prevention method in minimizing the occurrence of accident in building construction site (Client's satisfaction).

	N	Minimum	Maximum	Mean	Ranks
Decrease Time and Money Lost After an Accident	69	2	5	4.57	1st
It improves economic growth	69	1	5	4.43	2nd
Safety Reduces Work-Related Accidents	69	2	5	4.42	3rd
Safety on Construction Sites Protects the Public	69	2	5	4.36	4th
High morale to work	69	2	5	4.33	5th
No hazard will be recorded	69	1	5	4.32	6th
Increase Compliance with a Dedication to Safety	69	2	5	4.26	7th
Commitment to the project	69	2	5	4.26	7th
Increased productivity	69	2	5	4.26	7th
Increased motivation	69	2	5	4.25	8th
No health defect in hearing	69	1	5	4.23	9th
Accident is completely avoidable	69	2	5	4.22	10th
Improves safety and productivity	69	1	5	4.16	11th
Improve employee performance	69	1	6	4.16	11th

Improves quality and productivity	69	1	5	4.14	12th
Decreased employee premiums	69	2	5	4.14	12th
Cost of operation rescue	69	1	5	4.07	13th
No loss of human life	69	1	5	4.03	14th
Improve external image and brand	69	1	6	4.03	14th
Optimize productivity	69	1	5	3.94	15th
Reduced workers compensation claims and cost	69	1	5	3.83	16th

Source: Author (2023)

Table 10 below shows the effect of implementing strategies of accident prevention method in minimizing the occurrence of accident in building construction site on cost, time, quality, safety and client's satisfaction are; time, quality and cost, client's satisfaction, safety.

Table 10 Descriptive statistics of comparative effect of implementing strategies of accident prevention method in minimizing the occurrence of accident in building construction site on cost, time, quality, safety and client's satisfaction

	N	Minimum	Maximum	Mean	Ranks
Time	21	4	5	4.24	1st
Quality	21	4	5	4.19	2nd
Cost	21	4	5	4.19	2nd
Client's satisfaction	21	4	5	4.05	3rd
Safety	21	4	4	4.00	4th

Source: Author 2023

V. Conclusion

This study concluded that cost of operation rescue, increase compliance with dedication to safety, decrease time and money lost after an accident, improves safety and productivity, decrease time and money lost after an accident are the most significant of the effect of implementing strategies of accident prevention method in minimizing the occurrence of accident in building construction site, conclusively the effect of implementing strategies of accident prevention method in minimizing the occurrence of accident in building construction site on cost, time, quality, safety and client's satisfaction has its major effect on time.

VI. Recommendation

This study recommended that the implementing strategies of accident prevention method in minimizing the occurrence of accident in building construction site should be focused of all the construction stakeholders as it has major effects on time of the project.

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