

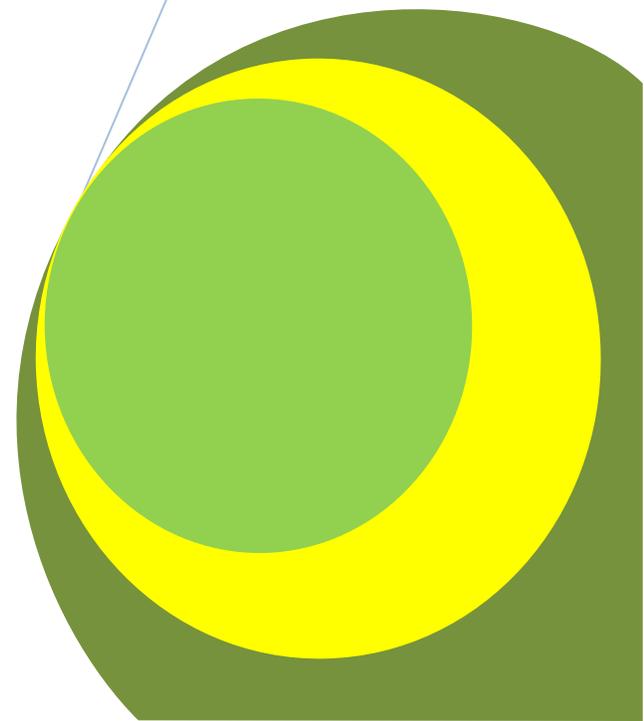
# Greener Journal of Environment Management and Public Safety

ISSN: 2354-2276

## **Assessment of Safety Measures on Building Sites (A Case Study of Minna, North Central Nigeria)**

By

**Makinde Joseph Kolawole**



*Research Article*

# Assessment of Safety Measures on Building Sites (A Case Study of Minna, North Central Nigeria)

**Makinde Joseph Kolawole**

School of Entrepreneurship and Management Technology, Federal University of Technology, Minna.

Email: makinde.joseph@gmail.com, makindejoseph38@gmail.com

---

## ABSTRACT

This paper studied the attitude of building industries within Minna metropolis towards safety provision for their workers on site. It evaluates whether the provision of safety measures reduces the workers claim due to accident on site and also increased their morale for better performance. The aim of the study is to examine the sustainability of safety measures employed by building industries in Minna. To achieve this aim, three hypotheses were formulated and to test these hypotheses, 64 copies of questionnaires were administered to workers on site and management staff in eight randomly selected building construction industries. 46 copies of questionnaire (72%) were returned and analyzed using descriptive method of statistics. From the analysis, it was observed that there exists a strong relationship among the variables tested. The study concluded that provision of adequate safety measures for workers on site will improve the performance and also enhance the building industry's productivity.

**Keywords:** Accident, Attitude, Claim, Construction, Management, Productivity, Safety, Workers.

---

## 1. INTRODUCTION

Concern for safety resulting from accident dates back to the industrial revolution of the 18th century in Great Britain, when machines were invented and factories were built and installed with these machines. Several accidents occurred in the factories resulting in injuries, maiming, incapacitation and death. People also suffer illness from exposures to toxic fumes and gases. The accidents and illness occurred because workers were exposed to contact with dangerous moving parts of the machines that had no guard on them and the factories were poorly lit and inadequately ventilated. In addition, the workers were not properly trained to work on the machines. Meanwhile the employers were happy with the returns that resulted from increased production at lower cost, caring little about the suffering of the workers. Safety in building construction therefore entails protection from any risk or danger when a building project is under construction or in progress. To achieve this noble objectively on sites, safety is a collective co-operation of all persons involved in the construction industry ranging from contractor, operatives, supervisors and even general public. As the saying goes, the best and most effective way to do any job is through safe way.

Building industry in Nigeria needs special attention as far as safety is concerned. This is because the industry harbors a lot of quacks and questionable tradesmen, most building contracts in the rural areas both private and government contracts fall into the hands of illiterate "money bags" who has taken over constructing jobs in Nigeria. Statistics published out by the Federal Tenders Board, 1985 in Lagos State stipulates that "this category of contractors handles a substantial percentage of contracts; yearly as they constitute about 70% of our contractors who handle job below five million naira (#5,000,000.00). The other 30% of the contract involves professionals in building contracting. Since the formal weld a lot of influence and have more to throw around, they are better favored always than the professional group in the award of contract. This has made safety in the building construction industry which should have been a vital concern, to attract little or no attention over the years. The apparent neglect might be construed as meaning accident are infrequent and negligible on construction sites, but this is not so, as many accidents are observed daily on sites.

Ezeji (1984) explained that "some of accidents are minor while very few are fatal ones". Most of these accidents are never documented as contractor's settles with the victims individually privately; government on its part has not altogether kept silence as construction sites accident kills and maims its citizenry. Researchers found that the economic impact to be far reaching, affecting not only employers who suffered heavy financial loss, but also employees and their families, as well as communities and government. On average, twenty two million pounds are lost each year and six hundred and fifty people are killed by industrial accidents, In Great Britain alone , these

figures are the one's recorded officially as it is estimated that about ten million (10,000,000.00) accident's per year are not reported.

The figure could be higher in Nigeria's situation because of our carefree attitude, negligence and indifference to most safety rules and regulations. Most tradesmen are frustrated in their previous endeavor or engagements and such finds their way into the building industry as last hope. Attendant loss due to any accident occurrence on site could be enormous as this may result in loss of life, money, time and company reputations. Therefore, safety of workers on construction sites must be of paramount importance to any construction sites that wants to continue to operate.

## **2. NEED FOR THE STUDY**

The study would aid to create awareness on safety programmes in order to reduce the number of workers compensation claims and cost due to accidents and also lead to the enactment of legislation requiring employers to provide safe and healthful place of work, pay for medical care and pay compensation for injuries, disabilities, death and illness that results from work activities. It also intends to minimize the issue of people suffering pains and loss of earnings and families losing their breadwinners.

## **3. AIM**

The aim of this study is to assess the safety measures put in place by industries in Minna and its relationship on workers' productivity on site.

## **4. HYPOTHESES**

For the purpose of this paper, three hypotheses were formulated, these are as follows:-

- a. No relationship exists between the level of awareness on safety techniques and workers output
- b. No relationship exists between government enforcement of safety and frequency of accident
- c. No relationship exists between the level of awareness on safety techniques and frequency of accident.

## **5. SAFETY IN THE CONSTRUCTION INDUSTRY**

Construction Industry Training Board (CITB) (1990) proclaimed that worker's health, safety and welfare at work are protected by law. Employers have a duty to protect its workers and to keep them informed about health and safety standards. Workers have a responsibility to look after themselves and others. Anderson (1992) states that proactive safety performance is assured by providing the following: Plant and equipment which fit the purpose of reducing risks from identified hazards as far as it is reasonably practicable; system and procedure to operate and maintain equipment in a satisfactory manner and to manage all associated activities; and people who are competent, through knowledge, skills and attitude, operate the plant and equipment and to implement the system and procedure. The overall construction industry is still looking at positive way to change to a safer working environment with many researchers including Hinzer (1996). Kunju (2000) states that safety should look beyond accidents and more towards human behaviors and culture.

### **5.1 Construction Site Accidents**

An accident is a casualty or an unforeseen event characterized by sudden and external force or violence, it is an unfortunate happening, that leads to personal injury, death and damages to or loss of property. It is a blind chance happening. Site accident sometimes happens because of complete mistakes or lack of awareness on the part of the workers. And as such employees should have the basic knowledge of plants, materials and technology of the trade involved in the construction works. Accidents resulting from lack of awareness occur mostly in specialized or disciplined operations. Other cause of accidents in the construction sites includes indiscipline, inadequate communication and site characteristics.

Walah (1973) was of the opinion that "this accident can be rectified by the workers abiding by the rules and regulation in respect to the happening". The fault of accident lies with the system, environment and person involved

in the construction. Prevention of the accidents is a means of forecasting the occurrence of an event through anticipation, prevention of accident which involves providing safe working environment, training or educating the workers in line with safety rule and provision of safety equipment. Prevention may be costly in the building industry but care of accident will always be higher. Little has been written in the past about accident and its prevention in the building industry. It is rather disheartening to note that, with its effect on construction industry, little attention is still paid to construction site accident. Most of the literatures written are on the manufacturing factories accident. Nevertheless, little that has been written will go a long way to improve or correct situation or imbalance if put into practice.

## 6. RESEARCH METHODOLOGY

The method of data collection utilized for this paper basically includes both primary and secondary sources of data. Primary data collected includes personal visitation to sites, personal interview and questionnaire administered randomly to workers and management, personal observation of safety acts and conditions on sites.

### 6.0 Instrument

The instrument used for gathering data for this study is a well structured questionnaire covering the safety measures put in place by management of construction companies, the age, academic qualifications and marital status of each worker.

### 6.1 Administration of Questionnaires

64 copies of questionnaire were administered to two categories of worker (skilled and unskilled) by hand in each of the eight construction companies randomly selected in Minna. 46 copies of the questionnaire were returned by respondents.

### 6.2 Sampling Technique

In many cases, it is often difficult to study all the people in the group in order to provide an accurate and reliable description of what is to be studied. As a result, a sample of the population to be studied would suffice. For the purpose of this study, the systematic random sampling was used in the selection of construction companies. Eight construction companies emerged from this technique.

### 6.3 Data Analysis Technique

The data collected is subjected to descriptive method of statistics. The descriptive method is an effective method of obtaining exact facts and figures about a current situation. It consists of displaying the data in the form of chart.

## RAW DATA PRESENTATION

**Table1. Administration of Questionnaires to workers and management**

Companies	Name Of Company	No Distributed To Site Workers	No Retrieved From Site Workers	No Distributed To Management	No Retrieved From Management	% Of Responses
A	Loard Diagnir Nig Ltd	5	3	5	3	60
B	Dekit Construction Company	5	5	3	3	100
C	Heritech Aluminium & Stell Production	5	3	5	3	60
D	Ogunsilber Builders (Nig) Ltd	5	4	5	4	80
E	Dymaxion Nig Ltd	4	3	4	3	80

F	Georgia Construction Company Ltd	3	2	3	2	70
G	Afad Nigeria Limited	4	2	2	2	80
H	B.C.C Nigeria Limited	3	2	3	2	70
Total		34	24	30	22	71.9

Source- Researcher's Data (2011)

Table 2 shows that 58.33% of the respondents were 20 – 29years of age. This clearly indicates that majority of workers on site were very young and they have the ability to improve the output of the construction company; 50% of the respondents were single and therefore less thinking of family problems that are expected which can affect their productivity on site. Also 33.33% workers on site were secondary schools graduates, while 16.67% each are H.N.D and Degree holders, this indicates that we have less educated population for the study compared to non-educated one's and as such less performance are expected for the construction operations. The table also revealed that only 29.17% of the respondents were of 3-5years working experience on site.

**Table 3. Summary of management staff background.**

	NO OF RESPONDENTS PER COMPANY								TOTAL	% SCORE
	A	B	C	D	E	F	G	H		
<b>EXPERIENCE ON CONSTRUCTION MANAGEMENT</b>										
a) 2 or below	-	-	-	1	-	-	1	-	2	8.33
b) 3 – 5 years	1	1	-	1	-	-	-	-	3	12.5
c) 6 – 8 years	2	1	1	-	2	1	-	1	8	33.33
d) 9 – 11 years	-	1	1	1	1	-	1	-	5	20.83
e) Above 11	-	-	1	1	-	1	-	1	4	16.67
<b>SERVICE EXPERIENCE IN PRESENT COMPANY</b>										
a) Less than 2 year	-	-	-	1	1	-	1	-	3	12.5
b) 2 – 5 years	1	2	1	1	1	-	-	1	7	29.17
c) 6 – 9 years	2	1	1	-	1	1	1	-	7	29.17
d) 10 – 13 years	-	-	1	2	-	1	-	1	5	20.83
e) Above 13 years	-	-	-	-	-	-	-	-	0	-
<b>STATUS OF ORGANISATION</b>										
a) small	-	-	-	-	-	1	-	-	1	4.17
b) medium	1	3	2	2	3	1	1	1	14	58.33
c) big	2	-	-	1	-	-	-	1	4	16.67
d) not small neither big	-	-	1	1	-	-	1	-	3	12.5
e) very small	-	-	-	-	-	-	-	-	0	-

Source- Researcher' Data, (2011)

**Table 2. Summary of workers background**

	NO OF RESPONDENTS PER COMPANY								TOTAL	% SCORE
	A	B	C	D	E	F	G	H		
<b>AGE</b>										
a) 19 and below	-	-	-	-	-	-	-	-	0	-
b) 20 – 29 years	2	2	2	1	2	2	1	2	14	58.33
c) 30 – 39 years	-	3	1	2	-	-	1	-	7	29.16
d) 40 – 49 years	1	-	-	1	1	-	-	-	3	12.5
<b>MARTIAL STATUS</b>										
a) single	2	2	1	3	2	1	-	1	12	50
b) married	-	3	2	1	1	1	2	1	11	45.83
c) divorced	-	-	-	-	-	-	-	-	-	-
d) widowed	1	-	-	-	-	-	-	-	1	4.17
<b>EDUCATIONAL BACKGROUND</b>										
a) primary	-	-	-	-	1	-	-	-	1	4.17
b) secondary	1	2	1	1	-	2	1	-	8	33.33
c) O.N.D	-	2	-	2	1	-	-	2	7	29.17
d) H.N.D	1	-	1	-	-	-	1	1	4	16.67
e) B.sc	1	1	1	1	-	-	-	-	4	16.67
<b>YOUR EXPERIENCE ON SITE WORK</b>										
a) less than 2 years	2	-	1	-	2	-	-	-	5	20.83
b) 3 – 5 years	-	1	-	1	-	2	1	2	7	29.17
c) 6 – 9 years	-	1	2	2	-	-	1	-	6	25
d) Over 10 years	1	3	-	1	1	-	-	-	6	25

Source- Author field survey (2011)

**Descriptive Analysis on the variables tested**

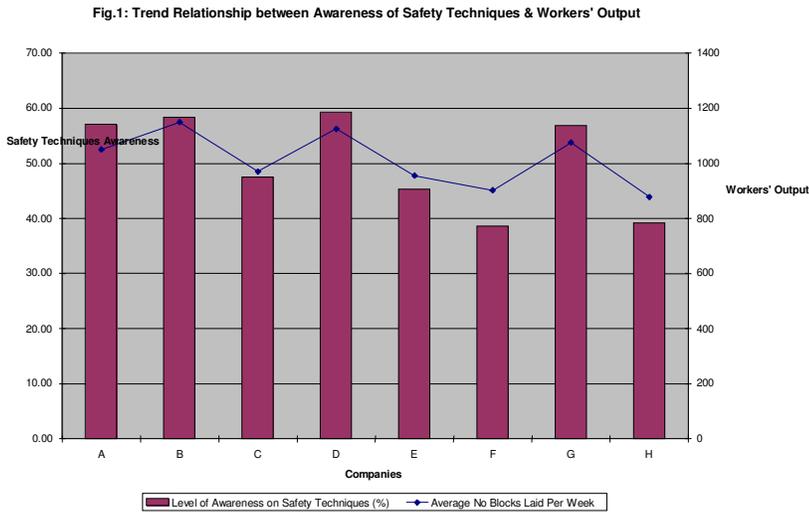


Figure 1 shows the trend relationship between the level of awareness on safety techniques and worker's output and its corresponding lowest, middle and highest value at company H, company C and company D respectively. This shows that the workers output increases with an increase in the level of safety techniques awareness and vice versa.

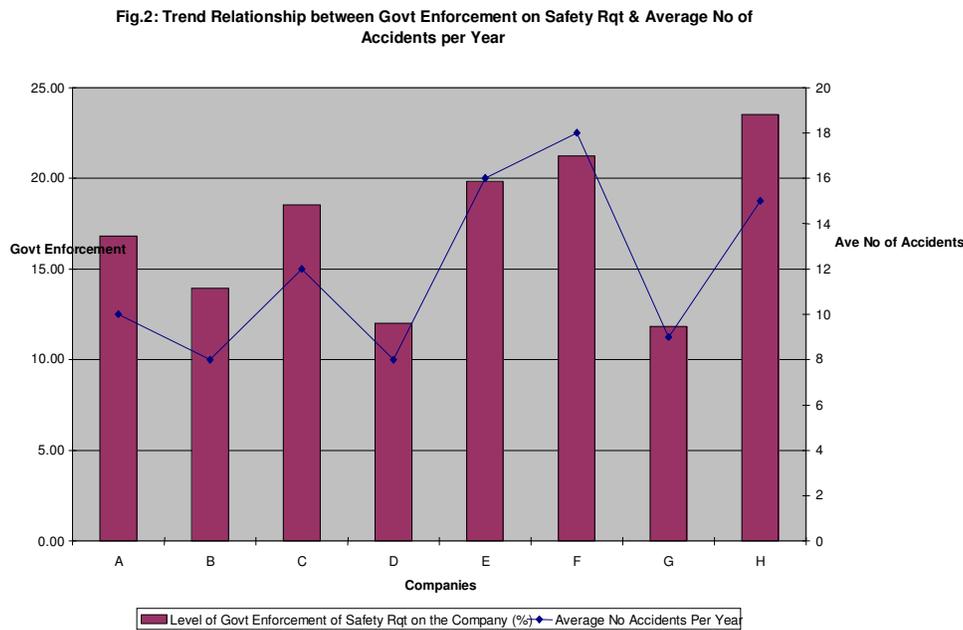
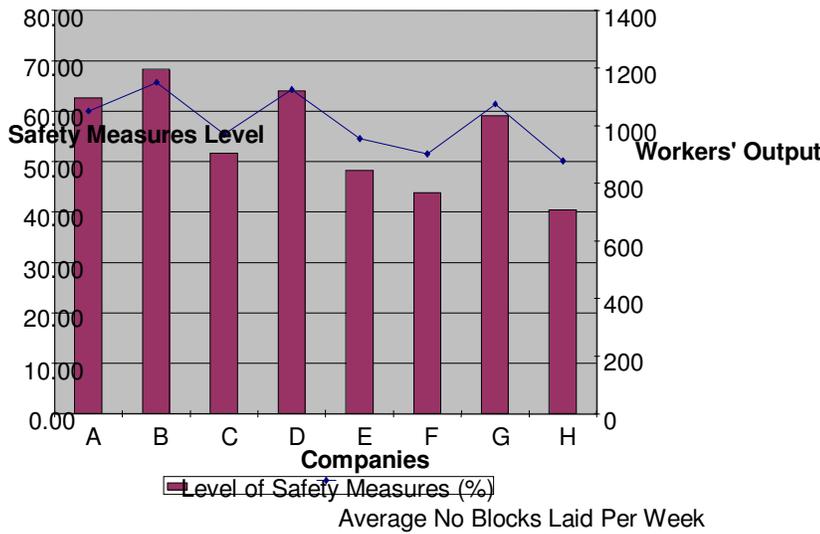


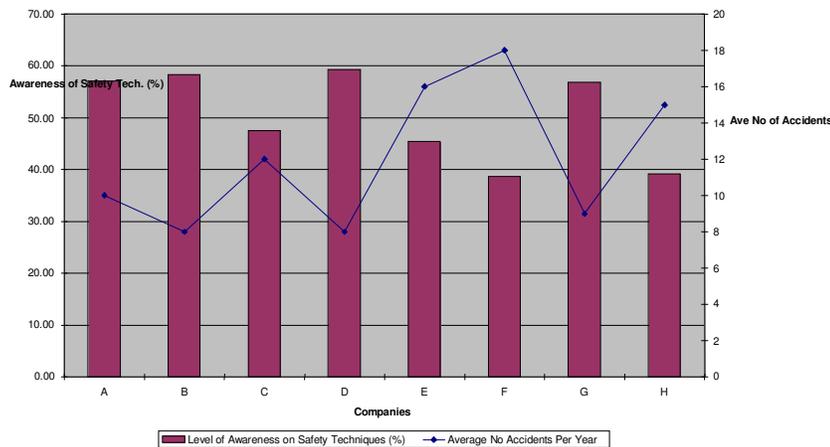
Figure 2 shows that level of government enforcement of safety regulation/policy follows similar trend pattern because both variables have their least values of company D and they both increase and decrease simultaneously.

**Fig. 3: Trend Relationship between Level of Safety Measures & Workers' Output**



Similarly, trend pattern is also noticed between the level of safety measures and workers output in figure 3. Both variables have their respective least, middle and highest values of company H, Company C and company B respectively. This implies that workers output increases with increase in the level of safety measures awareness and vice versa.

**Fig.4: Trend Relationship between Awareness of Safety Techniques & Ave No of Accidents**



In figure 4 on the other hand, it was noticed that the level of awareness on safety techniques and average number of accident recorded per year do not follow similar trend pattern. The variable have their respective least and highest values of different points. While the respective least and highest values of awareness of safety techniques occurred at companies F and D, the respective least and highest values of accident occurred at companies D and F. This implies that the number of accident increases with a decrease in the level of awareness on safety techniques and vice versa.

## CONCLUSION

From the population studied, majority of workers on site and their ages fall between (20 – 29) years with 50% of them being single. About 33.34% of those workers have both HND and degree as their qualification with 3 – 5 years working experience on site. Only about 33.33% of the management staff have 6 years and above as experience on site. 62.5% of the population studied (management staff and workers on site) agreed that provision of safety techniques to workers will improve their productivity and the study revealed that workers are never allowed to go for safety training programme on the job they performed. 63.64% agreed that no effective safety structure on ground for the employee and majority of them lack of awareness of safety techniques/policy and therefore being responsible for their safety on site. The study also revealed that majority of those companies have no safety department and therefore no record were kept for the accident reported cases. Majority of the companies agreed to have provided the protective equipment for workers but the study revealed that workers are not educated on the importance attached to it even when made available.

Majority of workers on site agreed not to work in any company that pay higher salary but without consideration for their safety. Workers on site embrace the safety training programme as this will reduce the accidents on site and therefore enhance their performance. It was observed that government do not have an effective safety act/regulations on construction companies and therefore majority of the companies do not bother to settle any claim that arose through accidents on site for their workers.

In the same vein, the number of safety measures for workers on site will improve their performance and therefore enhance their productivity. Information on safety techniques should be disseminated to workers (i.e. safety policies as these will reduce accident on site and increase worker's morale for better performance. Ineffective government policy on safety measures for workers on site tends to reduce the morale of workers since they do not have access to any claim when accident occurred on site and this reduces company's productivity.

## RECOMMENDATION

Based on the conclusions reached above, the following recommendations were proposed;

- a. Stiff penalty should be in place for any construction firm that their worker's sustain fatal injury due to safety negligence.
- b. Construction companies should be encouraged through their professional body on the need to have competent safety adviser and to train and re-train their workers in the area of health and safety.
- c. Government should provide adequate safety policy (safety act) to ensure workers are fully compensated when there is accident on site.

## REFERENCES

- Anderson, J.M (1992). *Managing Safety In Construction. Proceedings Of The Institute Of Civil Engineering*, London.
- Construction Industry Training Board manual (1990). *Managing Health And Safety In Construction*. Principles and application to main contractor/sub-contractor projects. HMSO, London.
- Ezeji S.C.A (1984). *Building Construction*. 1<sup>st</sup> edition Longman group Ltd, London. Federal Tender Board (1985). *Federal Tender Board*. Unpublished, Lagos, Nigeria.
- Federation of Civil Engineering Contractor's (F.C.E.C) (1975). *Supervisor safety booklet*. Published by the Federation of Civil Engineering Contractor 3<sup>rd</sup> edition London.
- Henirich H.W (1968). *Industrial Accident Prevention*. 2<sup>nd</sup> edition Longman group Ltd. UK.
- Hinzer J. (1996). *Construction Safety Record Since 1971*. Proceedings of ASCE National Convention, 1996 New York.
- Kunju A.R (2000). *Symposium of the ISSA Construction System*. Faculty of Built Environment Technology, University of Malaysia, Malaysia.
- Wallah. D.J (1963). *Accident Prevention Manual for shop teacher*. The Technical Press Ltd London.