Journal of Multidisciplinary Engineering Science Studies (JMESS)
ISSN: 2458-925X
Vol. 8 Issue 4, April - 2022

The Effects Of Security Threats On The Operations Of Construction Sites In Northern Nigeria: A Case Study Of Katsina State

Ibrahim Sani Yar adua
Tel. 08033701386, e-mail: sani4hukpoly02@gmail.com

***Abstract*—The construction industry, a major player in the national economy has over the last few years been threatened by crime in its broad ramifications with records of wide ranging incidents of kidnap for ransom, armed robbery, and other forms of terrorism with serious implications on the financial and operational performance of the sector. This research explored the effects of crime and terrorism on the operations of selected construction firms in Katsina state, one of the most serious states affected by the current wave of banditry and terrorism in Nigeria. Three companies were purposively selected for the research and using a cross-sectional design, respondents were selected based on a simple random sampling technique. Structured questionnaires were designed and administered on a total of 59 respondents. Data collected was summarized and then analysed by the use of descriptive statistical methods to assess the effects of security threats on the construction companies directly and indirectly and the measures undertaken by the companies to overcome the effects. Results of the analysis have shown that several types of security threats affected the companies on their operational sites. These threats ranged from property theft, kidnapping for ransom, Rape of family members, Banditry, Armed robbery, Thuggery, criminal extortions, cybercrimes involving monetary frauds and data theft and many other forms of threats that affected either the company or its individual employees. These effects have had varying implications on the firms. Some of these effects were financial while others were social affecting the employees directly. Several measures and provisions have been made by the firms to cushion the security challenges faced by the firms. Some of which were targeted at the employees, policy and operational environment. In order for the construction firms to overcome the effects of the security threats on their operations, a number of recommendations have been made. Adequate security awareness and adequate safety provisions should be made by construction firms, Construction sites should be security responsive in their designs., Adequate and effective security surveillance systems should be installed to safeguard life and property and Construction firms should maintain a good safety policy which should incorporate comprehensive insurance for employees and property.**

Keywords—Construction Sites, Effects, Operations, Security Threats

Introduction

The construction industry, a major player in the national economy has over the last few years been threatened by crime in its broad ramifications. Many incidents of kidnap for ransom, armed robbery, and other forms of terrorism have been recorded involving construction workers and other stake holders in the industry. These have had serious implications on the financial and operational performance of the sector. Safety is an important component of the building and construction industry. This is because construction workers are greatly exposed to a number of hazards and occupational accidents.

According to Mohammed (2003), the construction industry is concurrently recognized as a major economic force and one of the most dangerous industries. Accidents, security threats and incidences not only result in considerable pain and suffering but marginalize productivity, quality, time and negatively affect the environment and consequently add to the cost of construction. Considering the adverse impacts of accidents, construction health and safety management is of genuine concern to all stakeholders in the construction industry. According to Mbuya and Lema, (2004) in most developing countries, health and safety consideration in construction project delivery is not given priority, and employment of safety measures during construction is considered a burden. Health and safety has been identified as a parameter which should be used along with the traditional parameters: cost, quality and time, to measure the success of projects.

The construction industry in Nigeria is under siege following recent incidents of Kidnap for ransom, High profile robberies and banditry. The existing situation is alarming. Over the past years, improvements have been made in health and safety performance in some aspects of the construction industry; but very much requires to be done on the current wave of security threats with underlying themes of financial and legal liabilities. This has been seen in many instances in the northern and southern part of the country making construction site the most dangerous environment.

Traditional health and safety efforts are not sufficient enough to truly curb the occurrence of contemporary unsafe situations on construction sites particularly in some parts of Nigeria. Security of workers at all the stages of the construction projects should be a primary concern for all employers, contractors and stakeholders in all parts of the construction industry.

When incidents happen, they usually result into human tragedies, de-motivate workers, disrupt site activities, delay project progress and affect the overall project cost (Okoli and Okoye, 2012). Many projects have been suspended, others delayed and many others cancelled as a result of foreseen security threats. The Nigerian construction industry is therefore under siege by terrorists and other criminal elements.

The Study area and Scope of the work

Katsina state, with more than ten local government areas as terrorism front line areas was the third-most affected state by the current wave of crime and terrorism in the North west and North central regions of Nigeria (International Organization for Migration (IOM, (2020) was selected for the research. Suffering from deadly conflicts involving many armed organizations, including herder-allied groups, *vigilantes* (a name for volunteer guards), criminal gangs and jihadists (ICG, 2020), it has been an established theatre for shooting and killing, cattle rustling, kidnapping, rape, torching of entire villages, and looting of valuables.

The state has been purposively selected for the research. The works is limited to data obtained from the employees of ABIB Ventures Nigeria Limited, Afdin Construction Company and Muntasrab Nigeria Limited, Katsina. Information used for the study is narrowed to the effects of security threats on the site operations of the construction firms in the study area as this may vary with other regions of the country.

The Importance of Health and Safety in the Work Place

Occupational health and safety has been defined by the International Labour Organization (ILO, 2001) as: “The prevention and maintenance of the highest degree of physical, mental and social well-being; the prevention of ill-health among workers caused by their working conditions. The protection of workers from factors that are adverse to their health in their employment, and the placing and maintaining workers in occupational environments adapted to their individual and psychological conditions.” According to Hughes and Ferret, (2008) health refers to the protection of bodies and minds of people from illness resulting from materials, processes or proceeding used in the work place whereas safety is protection of people from physical injury. A high level of occupational health and safety contributes to the achievement of material and economic objectives and provides high quality and performance in working life. In spite of this, conditions at work and in the work environment for many occupations and in many countries still involve a distinct and even severe hazard to health that reduces the well-being, working capacity and even the life span of working individuals.

On many construction workplaces, workers are exposed to a number of hazards related to occupational diseases and injuries and the adverse effects of excessively long hours of work. Machines, plants and other sophisticated construction equipment pose danger to the operators. The current circumstances in many countries of the world including Nigeria have made construction sites and construction workers excessively exposed to a greater risk of criminal and terrorist attacks.

Health and Safety Measures on Construction Sites

Traditionally, several measures have been devised by managers to ensure safety on their sites. Governments in some countries have also instituted legislations in this regard. Health and safety measures practiced by managers on construction sites include the following.

Site Layout and Planning

A badly planned and untidy site is the underlying cause of many accidents and a layout which caters best for the safety and health of workers may appear to be difficult to reconcile with productivity. Proper planning by management should therefore be an essential part of preparation and budgeting for the safe and efficient running of a construction operation. In addition to the many accidents due to tripping, slipping or falling over materials and equipment which have been left lying around, and stepping on nails which have been left projecting from timber and more recently, the greater threat of terrorism in the form of kidnapping for ransom, rape, armed robbery, thuggery and other criminal tendencies come as a result of poorly planned and organized site. This is particularly with respect to site accessibility.

Personal Protective Clothing (PPE)

Personal protective equipment (PPE) refers to protective clothing, helmets, goggles, or other garment or equipment designed to protect the wearer's body from injury by blunt impacts, electrical hazards, heat, chemicals, and infection for job-related occupational health and safety purposes. OSHA (2007) requires the use of personal protective equipment (PPE) to reduce employee exposure to hazards when engineering and administrative controls are not feasible or effective in reducing these exposures to acceptable levels.

However, PPEs are only intended to safeguard a worker from health related threats and not from the threats posed by terrorism and its related tendencies. In modern days, an addition has been made to PPE by incorporating Bullet proof jackets and gas masks to safeguard employees from the threat of kidnapping,

personal assault, armed robbery, banditry and allied crimes.

First aid Kits and Accident Reporting

Construction sites are dangerous places, and first aid and rescue equipment should always be available. What is needed depends on the size of the site and the numbers employed, but there should be a blanket and a stretcher. On large sites where more than 200 people are employed, there should be a properly equipped first aid room.

Health and Safety Warning Signs

Safety Signs and Signals are an important means of communicating health and safety information. This includes the use of illuminated signs, hand and acoustic signals (e.g. fire alarms), spoken communication and the marking of pipe work containing dangerous substances. Traditional signboards, such as prohibition and warning signs, signs for fire exits, fire action plan notices (fire drills) and fire-fighting equipment are also considered to be Safety Signs. In contemporary situations, notices are provided to alert workers on other threats such as liability to kidnap and assault. It is critical that all Safety Signs and Signals can be easily understood. Where signboards are used in a workplace they should be sufficiently large and clear so that they can be easily seen and understood (HSE 2009).

Safety Policy

Site managers should have a written safety policy for their enterprise setting out their safety and health standards. Construction safety policy therefore is something that must be developed by each site manager and operating company prior to starting any construction job. Once developed the development safety plan should be placed into a training program that's needed to be undertaken by every site worker prior to partaking in any job on that site.

Health and Safety Risk Assessment

Health and safety risk assessment in a construction site is an important measure towards reduction of hazards and injuries. According to HSE (2010), employers are required to make an assessment of the health and safety risks to which employees and others are exposed on construction sites. The significant findings must be recorded where five or more people are employed.

Health and Safety Training on Construction Sites

Safety and Health training consist of instruction in hazard recognition and control measures, learning safe work practices and proper use of personal protective equipment, and acquiring knowledge of emergency procedures and preventive actions. Training also provide workers with ways to obtain added information about potential hazards and their control; they could gain skills to assume a more active role in implementing hazard control programs or to effect organizational changes that would enhance worksite protection.

Legislation and Enforcement of Health and Safety Regulations

In most developing enforcement of health and safety regulations remains a problem due to lack of adequate resources available to government institutions responsible for occupational health and safety administration. In Nigeria, the large number of small and medium enterprises operating within their domestic markets has made enforcement of health and safety standards difficult and very poor.

Research Design and Data Collection

In this research respondents were selected based on a simple random sampling technique. Structured questionnaire was designed and administered to the respondents. In addition to the Questionnaire survey, structured interview was undertaken to obtain additional information on the subject matter.

Population and Sample Size

ABIB Ventures Nigeria Limited, Afdin Construction Company and Muntasrab Nigeria Limited are construction companies operating in Northern Nigeria selected for the research. All categories of employees of the companies including permanent and hired workers involved in projects within the frontline local government areas of Katsina state are participants in this study making up the research population. The companies employ the services of an estimated 118 workers. A 50% sample was decided for the research comprising of 59 respondents drawn randomly.

Instruments for Data Collection

Two different data sets were collected for the purpose of this research work. They are responses obtained through interview and Questionnaire. The interview was administered only on ten of the management staff of the companies.

Method for Data Analysis and Presentation

The data collected was summarized and then analysed by the use of statistical methods to assess the effects of security threats on the construction companies directly and indirectly. The results are presented in frequency tables and figures.

Data Presentation and Analysis

Respondents Gender

The respondents generally were made up of male employees owing to the nature of the business of the firms and the location of the projects. 100% of the research respondents were therefore male. This is presented in the following table.

Table 1. Respondent's Gender

Gender	Frequency (n=59)	Percentage (%)
Male	59	100
Female	0	0
Total	59	100

Respondents'' Marital status

The research sample was made up of two categories of social relationships; those that were married and the single employees. 33 of the employees were married while the remaining 26 were single. Figure 2 depicts the respondents' marital status as percentages of total research sample.

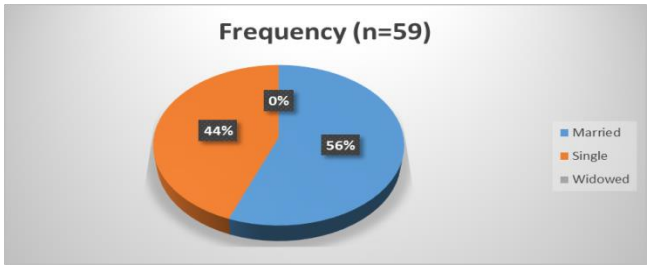

Figure 1. Respondents' Marital Status

Respondents' Academic Qualifications

The results of the questionnaire analysis show that the bulk of the respondents possess qualifications other than a Diploma/ Certificate and Higher National Diploma or its equivalent. 15 of the respondents possess either a Diploma or a certificate, 6 possess a Degree or a Higher National Diploma. None of the respondents possess a higher degree or its equivalent.

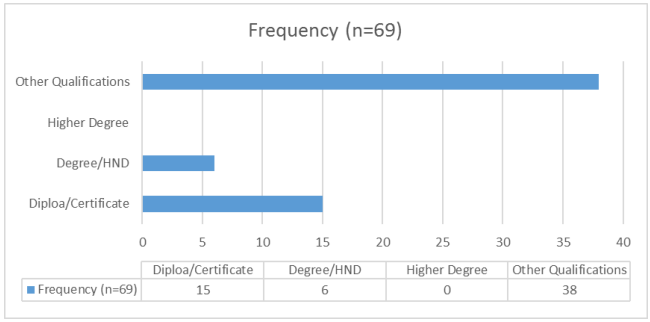

Figure 3. Respondents' Highest Educational Qualification

Employment Status of the Respondents

The firms comprised of workers from different categories and status. 25% of the staff were permanent members of staff of the firms. 53% work on temporary basis, 15% were contracted while the remaining 7% work on casual basis. This is depicted in Figure 4 below.

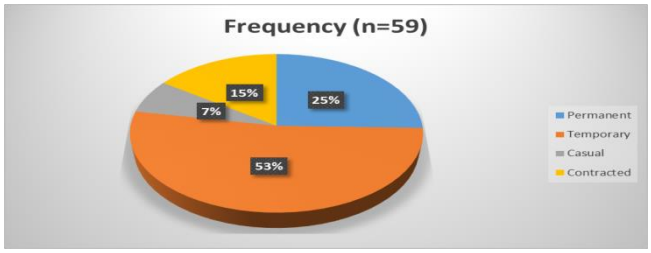

Figure 4. Employment Status of the Respondents

Professional Inclination of the Respondents

The professional inclination of the respondents is presented in Table 2 below. 19% of the respondents were administrators, 27% were artisans that provide technical and allied services made up of Masons, Plumbers, Electricians, Iron benders, Welders, Machine operators, Painters, Mechanics, Carpenters, Builders, Architects and engineers. The bulk of the respondents were labourers making up 41%. The remaining 13% were security personnel. The large number of security personnel in the employment of the firms signifies the presence of security challenges facing the firms.

Profession	Frequency (n=59)	Percentage (%)
Administration	11	19
Artisan	16	27
Labourer	24	41
Security Personnel	8	13
Others	0	0
Total	59	100

Table 2. Profession of the Respondents

Organizations Nature of Business

The case study firms were essentially contracting firms. 100% of the respondents admitted that the firms solely undertake contracting businesses. This is depicted in Table 3 below.

Type of Business	Frequency (n=59)	Percentage (%)
Contractor	59	100
Consulting	0	0
Supply	0	0
All of the Above	0	0
Total	59	100

Table 3. Organizations' Business

Type and Nature of Security Threats that Affected the Construction Firms

Several types of security threats affected the companies on their operational sites. These threats ranged from property theft, kidnapping for ransom, Rape of family members, Banditry, Armed robbery, Thuggery, criminal extortions, cybercrimes involving

monetary frauds and data theft and many other forms of threats that affected either the company or its individual employees. The frequency of each of these threats as it affects the company is presented in figure 5 below.

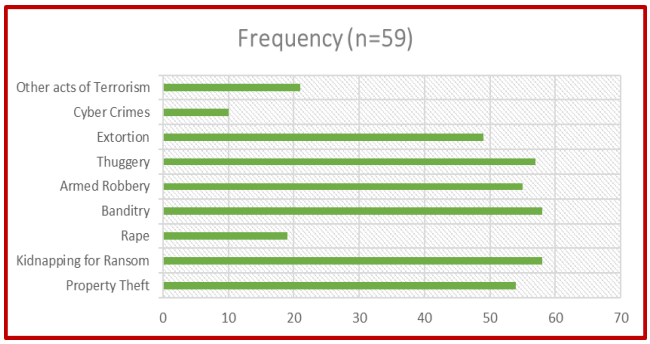

Figure 5. Security Threats that Affected the Operations of the Firms

Effects of Security Threats on the operations and performance of the Companies

The security challenges faced by the firms have affected their operations in several ways. Some of these effects were financial while others were social affecting the employees directly. Figure 5 below depicts the effects of the threats in terms of their magnitudes and frequency. The most serious effects were property loss and low labour productivity each with a frequency of 58 out of 59 respondents. The threats have also caused delays in projects execution as 57 of the 59 respondents admitted to this. It has also affected the company's annual turnover as the volume of work executed has drastically been reduced, cost of safety provision has increased. In general, the effects of the security threats on the companies and their employees are depicted in figure 5 below.

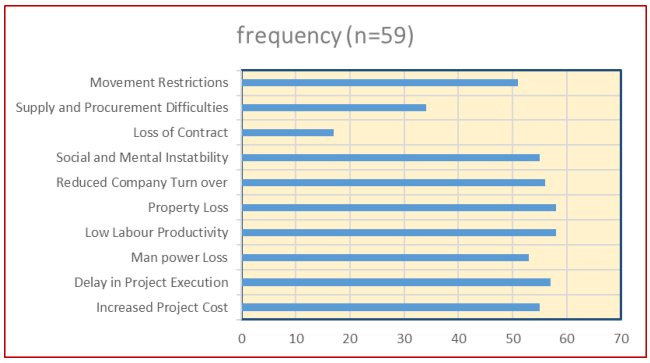

Figure 5. Effects of Security Threats on the Operations of the Firm

Safety Provisions by the Firm to Overcome the Effects of the Security Threats

Type of Safety Provision	Availability (n=59)
Security Responsive site	13
Personal Protective Clothing and materials	5
First aid kits and accident management	46
Health and Safety Warning Signs	9
Safety Policy	56
Periodic Health and Safety Risk Assessment	6
Health and Safety Training	2
Welfare Facilities	57
Legislation and Enforcement of Health and Safety Regulations	23
Security Surveillance Systems	51
Armed Security Guards/Vigilantes	4
Safety Insurance Policy	54

Table 4. Availability of Safety Provisions by the Firms

Several measures and provisions have been made by the firms to cushion the security challenges faced by the firms. Some of the measures were targeted at the employees, others were targeted at policy and operational environment. In order to safeguard the work environment, even though the firms did not engage private armed security guards and vigilantes, they have however maintained close security cooperation with the local police and the army. They have also installed security surveillance systems including close circuit televisions systems. They have also ensured the maintenance of a security responsive site with adequate health and safety warning signs and symbols. Other measures include the provision of first aid accident management systems, the provision of personal protective clothing and equipment for staff, enhanced welfare services to the staff, insurance for staff against unforeseen health incidents and many more provisions that govern the operations of the companies to ensure safety of workers and property. The type and frequency of safety provisions by the companies are presented in Table 4 above.

Ways of Mitigating the Security Threats Affecting the Operations of the Firms

Several measures have been recommended by the respondents on how to mitigate the security challenges affecting the operations of the firms. These recommendations range from issues of policy to those regarding the operational methods of the firms. In general, the measures recommended by the respondents are summarized under the following.

1. Improved security awareness. There should be improved security awareness among the employees of the firms.

2. Adoption of modern measures and methods of security surveillance including the installation of electronic surveillance cameras, security fences, fire and attack alarms, etc.

3. Provision of more and effective personal safety equipment and welfare services to employees.

4. Enhanced security personnel allowances.

5. Increased community-company- personnel relations.

Summary

From the foregoing analysis and discussions, construction firms in Northern Nigeria and particularly in Katsina state have been affected by a wide range of security threats. The effects included increased operational cost, loss of man hours, delayed project delivery, and other economic and social effects. This is evident in the frequency of the responses obtained through the questionnaire administration.

Several measures have been proposed for mitigating the effects of the threats on the operations of the firms. These measures include improved security awareness, adoption of modern measures and methods of security surveillance including the installation of electronic surveillance cameras, security fences, fire and attack alarms, etc., provision of more and effective personal safety equipment and welfare services to employees, enhanced security personnel allowances and increased community-company-personnel relations.

Conclusion

The operations of Construction firms in Northern Nigeria have been affected by security threats in a number of ways. These effects range from economic to social that directly affected employees of the firms. Measures proposed for the mitigation of the effects included a wide range of provisions bordering on policy and methodology.

Recommendations

In order for the construction firms to overcome the effects of the security threats on their operations, the following recommendations are made.

1. Construction firms should ensure adequate security awareness on their sites and in their services. This will go a long way in ensuring safe construction environments.
2. Adequate safety provisions should be made by construction firms. This should include personal protection items.
3. Construction sites should be security responsive in their designs. Adequate and effective security surveillance systems should be installed to safeguard life and property.
4. Construction firms should maintain a good safety policy which should incorporate comprehensive insurance for employees and property.

References

Cotton, A.P., Sohail M. and Scott R.E. (2005). Towards Improved labour Standards for Construction of Minor Works in Low Income Countries. Available at www.emeraldinsight.com/researchregister

Health and Safety Executive (2010). *Provision of welfare facilities during construction work* Construction Information Sheet CIS59 HSE Books 2010 www.hse.gov.uk/pubns/cis59.htm

Health and Safety Executive (HSE) (2009), "Work Related Injuries and Ill Health in construction", HSE web site, available at: www.hse.gov.uk/statistics/industry/construction.htm (accessed August 2008).

Hinze, J. (2002), "Safety Incentives: Do they Reduce Injuries?", Practice Periodical on Structural Design and Construction, Vol. 7 No. 2, pp. 81-4.

Hughes, P. and Ferret, E. (2008), Introduction to Health and Safety in Construction, 2nd ed., Elsevier, London.

International Crisis Group (2020). Violence in Nigeria's North West: Rolling Back the Mayhem Africa Report N°288 | 18 May 2020. International Crisis Group. Avenue Louise 235 • 1050 Brussels, Belgium. brussels@crisisgroup.org

International Organization for Migration (2020). Nigeria North Central and North West Zones Displacement Report Round 4 (August 2020). Nigeria Mission, Maiduguri Sub-Office. Available at *https://displacement.iom.int/nigeria*. www.globaldtm.info/nigeria

International Labour Organization ILO (2001), (2005), "Thailand – Occupational safety and health in the construction industry", available at: ww.ilo.org/public/english/region/asro/bangkok/download/background/osh/conth05.pdf (accessed August 13, 2007).

Mbuya and Lema, (2004).

Mohamed, S. (2003), "Scorecard Approach to Benchmarking Organizational Safety Culture in Construction." *Journal of Construction Engineering and Management*, Vol. 129 No. 1, pp. 80-88.

Okoli and Okoye, (2012)

OSHA (2007) United States Department of Labor Occupational Safety and Health Administration, available at: www.osha.gov/SLTC/etools/construction/trenching/mainpage.html (accessed April 2021).

Vredenburgh, A.G. (2002), "Organizational Safety: Which Management Practices are Most Effective in Reducing Employee Injury Rates?", Journal of Safety Research, Vol. 33 No. 2, pp. 259-76.