

OVERVIEW OF SAFETY PERFORMANCE IN THE CONSTRUCTION INDUSTRY

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The construction industry is one of the most dangerous industries worldwide due to deadly fatalities and accidents recorded yearly, compared to other sector of the economy in many countries. Though many safety programs have been established and implemented, the situation does not seem to have been mitigated the menace of accidents. Developing countries, like Nigeria, still lack laws and regulations on health and safety practices. The health and well-being of construction workers are being threatened by the increasing cases of injuries and casualties recorded at construction sites. The construction industry in Nigeria is also labor intensive with labor cost running between 40 to 65% of the total project cost. Operators are majorly categorized into multinational and indigenous construction companies. Indigenous companies in Nigeria are involved in an estimated 50 - 100% public and private clients in both traditional and non-traditional systems of procurement. However, indigenous companies' record 2 and 5 percent accident and injury level among workers with 300% more risk than the multinationals. Thus, this paper aims to provide an overview of the construction safety performance and construction stakeholders' operations in the construction industry of Nigeria. The overview is of potential benefit to the administrators of building development, building designers and policy makers.

Keywords: Construction safety, Buildings, Construction operatives, Health.

1 OVERVIEW OF THE NIGERIAN CONSTRUCTION INDUSTRY

Construction works are believed to have been as old as humanity itself, the same is reported to have started in Nigeria in 1930's (Okpala and Aniekwu 1988). The public works department (PWD) and Royal Army Engineers (Now, Nigerian Army Engineers) execute construction works in the country with direct labor being the only system of project execution. In the 1940s, Italian and British companies were awarded contracts in Nigeria (Okpala and Aniekwu 1988). Like other developing countries, the construction industry in Nigeria also labor intensive with labor cost running between 40 to 65% of the total project cost (Agwu and Olele 2014).

Nigerian construction companies are majorly categorized into multinational and indigenous construction companies (Idoro 2011). The Nigerian oil and Gas Industry Content Development Act 2010 as cited in Ogbu (2011) defined Nigerian indigenous company as "A company registered under the companies and Allied Matters Act and having not less than 51% of Nigerian shareholding". Such companies are considered as Nigerian owned firms with their personal

capacity determining on the scope of their operation (Inuwa *et al.* 2014a). While indigenous construction companies, mostly rely on contract awards from individual clients, their foreign counterparts are most often engaged in public private partnership projects and ones financed by government. This is largely connected to their technical personnel capacity, competent management skill, planning, proficiency in financial management and diverse methods of construction that adds credit to the international foreign firms Inuwa *et al.* 2014a). Through the provision of employment, infrastructure and implementation of construction projects, activities of indigenous construction companies grant immense contribution towards National Development of Nigeria (Osei 2013).

Indigenous companies in Nigeria are now involved in an estimated 50 - 100% public and private clients in both traditional and non-traditional systems of procurement, (Inuwa *et al.* 2014b). Various levels of occupational accidents have been recorded in most of the projects carried out by these indigenous construction companies with common recurrence of accident and injury cases in construction sites managed by such companies, although, exact record of construction accident in the country is not available (Williams *et al.* 2018). However, (Idoro 2011) found at 2 and 5 percent accident and injury level among workers in this industry as noticed in indigenous firms in terms of risk, the Nigerian indigenous companies bear 300% more risk than what is found in foreign firms in the country (Muiruri and Mulinge 2014). This high recurrence of accidents and fatalities in indigenous construction firms in comparison to multinational firms places them among the most changing and risky business in Nigeria.

Multinational construction firms are considered better in quality performance compared to indigenous one's base on the quality of their works, the quality of materials used as well as the rate of retention fees received for complete construction projects. In terms of performance and compliance, multinational construction firms are considered of more advantage than their indigenous counterparts, though there is a need for the assessment of other relevant factors. Though Idoro (2011) and Ogbu (2011), however, argued that multinational construction firms are more informed in terms of safety regulations than their indigenous counterparts, it is obvious that both categories of companies have maintained the same level of performance and compliance with safety practices.

To achieve the goal of building project as budgeted and without major accident, health and safety is a major influence. In the opinion of Abubakar Muhammad *et al.* (2015), assessment of workers' delivery, quality and productivity in construction projects would be positively affected by the workers' compliance with health and safety. It is an aspect that cannot be avoided in the construction process as various tradesmen and professionals make input at all stages of production (Dodo 2014). The number of indigenous staff involved in the management of a company as well as the joint ownership by Nigerian citizens according to Ogbu (2011) base the major determinants of indigenous construction company in the country. Such companies are mainly seen in the range of small to medium sized firms. Due to the effect it has on the final efficiency and effective execution of projects. Fawehinmi (2012) suggest that professionals and skilled workers in the construction industry can use safety practices to measure the success of project delivery, which is the client's main concern as they affect greatly the efficient and effective execution of jobs. Loss of huge resources and time had been attributed to failure of construction firms to abide by the minimum health and safety practices as required. Even as life insurance relieves the construction companies from the direct cost of hazards that befall staff during work, thus, many loses were recoded (Aniekwu 2007). Therefore, the process of production in construction projects is evidently hampered by failure to comply with safety practice Ogbu (2011) suggested that attitude of workers and how they behave towards the

delivery of their works while minimizing accidents and increasing output is the major driver of safety practice.

2 SAFETY PERFORMANCE IN THE CONSTRUCTION

Though, exact record of construction accident in the country has been rarely available (Inuwa *et al.* 2014a). Thus, the much desired goal of zero accident on the project site by their compliance with the established procedures, and regulation becomes a challenge (Umeokafor *et al.* 2014a). Although, many research efforts have been made in Nigeria to study the safety performance (Chuks and Uchenna 2013, Idoro 2012, Ogunde *et al.* 2014, Okoye *et al.* 2017, Umeokafor *et al.* 2014b). Despite the research efforts, incessant recurrence of accidents on Nigerian construction sites indicates a low level of safety practices in the industry (Idubor and Oisamoje 2013). What is probably lacking in the industry is a comprehensive and yet effective approach to achieve the much-desired goal of improved safety performance. This can be achieved through owner commitment to safety performance at all project phases. A number of studies have expressed various views of factors that influence how the construction activities are performed in the industry. Table 1 showed a summary of research efforts in Nigeria to study accident statistics. The traditional perception of accident causes on construction sites are being attributed to destiny, unknown causes, poor working conditions and poor working behavior as studied by (Idubor and Oisamoje 2013). Guldenmund *et al.* (2013) posit that ‘accidents happen due to bad luck or people’s ignorance’.

Table 1. Research effort in Nigeria toward identifying accident record.

No	Author	Remark
1	Abubakar Muhammad <i>et al.</i> (2015)	Comprehensive databases of occupational safety and health are rarely available in Nigeria.
2	Agwu and Olele (2014)	Nigeria hardly has consistent statistics on accident cases in the construction industry, this is attributed to the unwillingness of contractors to report the accident to the appropriate agencies.
3	Idubor and Oisamoje (2013)	In an industrialized economy, such as Nigeria, where there are no accurate data and laws are not enforced.
4	(Adeogun and Okafor, 2013)	Though, Nigeria has a system of reporting an occupational accident, however, it is described to be weak and ineffective.
5	(Diugwu <i>et al.</i> , 2012)	Contractors in the construction industry of Nigeria, hardly report, or issue accurate records of accidents due to the fear of being spotted or negative corporate image.
6	(Idoro, 2011)	Contractor’s accident and injury records are questionable because they view such records as having a damaging impact on the company profile
7	(Ezenwa, 2001)	The research outcome that presents the accident and injury statistics in Nigeria are by far higher due to poor reporting and enforcement.

3 OPERATIVES IN NIGERIAN CONSTRUCTION INDUSTRY

To attain client’s goal, various operatives make interdependent input by performing unique tasks in the construction industry. Project outcome is achieved mainly due to the link between the personnel, material, plants and financial resources (CITB 2014). As such, the operatives in the industry enhance more productivity and competition in the company, and also reduce the need for supervision and rate of accidents recurrence.

Personnel’s on site carry out certain tasks that are not handled mechanically. Both skilled and unskilled operatives are currently employed on the construction sites to execute the process of

building production. Tasks undertaken include ones carried out by electricians, carpenters/joiners, roofers, glaziers, tillers, steel benders and fixers, plumbers, scaffolds, plants and equipment operators, plasters and masons of walls among others. Professionals involved in the production process to ensure that the targeted goals are achieved are supervising these workers. Considering the risks associated with the work items involved, NBC (13.12.40 made registered builders responsible for the management of building construction as well as supervision of tradesmen and artisan involved in the construction project. (Alinaitwe *et al.* 2007, Bilau and Sholanke 2015, Dong *et al.* 2017, Fagbenle 2011 and Kuroshi 2014) holds site workers as paramount making the industry second largest employer of labor after agriculture. However, the quality performance of the industry is being threatened by the inadequacy of trained skilled artisan and tradesmen, thus, this lead the many accidents on sites.

4 PRODUCTIVITY OF WORKERS AND PERCEPTION OF SAFETY PRACTICES

Productivity in the view of (Attar *et al.* 2012) is a major performance indicator of and organization's significance no matter their market share index. In a study to establish the relationship between safety practices and employees' productivity in manufacturing companies by (Umoh and Torbira 2013); it was found that there is good relationship between productive output of employees and the availability of safety wears. This was corroborated by (Fawehinmi 2012) who posits that the productivity of workers is positively impacted by the utilization of safety wears, suitable tools and the work setting, motivation of workers as well as welfare facilities which in turn lead to higher profit for the organization.

Accidents, as argued by (Umeokafor *et al.* 2014b) apart from reducing the accruable profit to the companies also attract additional cost of production directly or indirectly. Thus, it is obvious that the productivity of employees has a strong link with safety policies of the organizations. Nonetheless, there is a need for the engagement of safety personnel to handle the impediments to workers' operations. However, with some obvious shortages, productivity have proved to be positively impacted by improvement in safety policy of operatives on site, (Umoh and Torbira 2013). Based on these therefore, working safely has been regarded as a major source of profit for the workers of construction sites.

In a similar study by Alinaitwe *et al.* (2007) workers output is very significant especially in developing nations that rely on manual operations for construction works. Factors influencing productivity of workers are classified into eight (8) by Agwu and Olele (2014) the most significant towards improving workers' productivity is the motivation. Labor productivity-analysis of ranking' was also studied by Rao *et al.* (2015) in which sixty one (61) factors were considered and further grouped into six (6). In the same inclination, Funso *et al.* (2016) are of the opinion that labor productivity increases under the influence of safety performance and motivation of workers. Construction workers in Nigeria are being challenge between productivity and safety performance, as record on accident rate or report is hardly available. According to Sherratt (2016), the people operating in it cause problems of the construction industry. Idoro (2011) observed that, to achieve maximum performance on project, the adoption of a safety culture covering specific factors like commitment of the management, involvement of workers and adoption of self-regulation and enforcement without compromise would significantly influence safety performance rather than considering the awareness and compliance only.

5 DISCUSSION AND CONCLUSION

Although, many studies have been conducted in the field of construction safety, and most of these research were geared toward improving safety performance and reducing or eliminating the

menace of an accident on a construction site. Studies have established various views of the factors that influence the construction performance and relationship between accident type and the corresponding causal factors. Various assessment tools, framework and models were also developed with the view of mitigating construction accident. Also, design guidelines were established to provide informed safety decision to eliminate safety risk when making design decisions. Thus, all the research outcomes provide many recommendations and have the ability to improve safety performance during the project execution. However, these recommendations are either developed in context of a specific country with a difference in culture and region, or being too complex to be used by either the designer or other construction industry participants in other geographical regions. Therefore, there is need to establish a self-regulatory model or framework towards promoting and enforcing safety in the construction industry of Nigeria. These will provide self-guide to the provisions of safety commitment and support to safety performance, and it will ensure that the desired aim of improving safety performance is met. Furthermore, it will give an enabling environment for the industry stakeholders to embrace safety commitment as part of project delivery.

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