

Health and Safety Management Practices in the Nigerian Construction Industry: A Survey of Construction Firms in South Western Nigeria

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Abstract

Despite the relevance of the construction sector in developing countries, the industry continues to record unacceptable levels of accidents and fatalities. The situation is no different in Nigeria where health and safety (H&S) management has been cited as a major contributor to poor H&S performance. Despite the need for improvement, there remains a dearth of research on the specific H&S management practices and elements of H&S management that need attention. This study thus provides insight into the H&S management practices of contractors in the South West of Nigeria. A questionnaire survey was used to investigate the H&S practices implemented by 115 construction firms. Results from the survey indicate that only a few H&S management practices are commonly implemented by contractors in South Western Nigeria. These practices include: informing employees about hazards on site before work starts; and communicating H&S information to workers through newsletters, leaflets and posters. H&S management practices that are less implemented include: providing H&S supervisors on site; site inductions for workers; rewarding workers for safe work behaviour; assessing the competence of workers and subcontractors; keeping incident records; investigating the causes of incidents, accidents and near misses; providing training programmes for H&S manager(s); and undertaking risk assessment for work packages or operations before they start. Overall, the research shows a gloomy outlook of the implementation of practices in key elements of H&S management (i.e. policy, planning, organising, risk assessment, implementing, performance measurement, and auditing). Contractors, relevant state authorities and industry bodies therefore ought to take collective action to improve H&S management by contractors.

Keywords: health and safety, health and safety management, survey, Nigeria

1. Introduction

Construction continues to be one of the main contributors to occupational related accidents, injuries and ill health. This is attributed to unsuitable working environments, unsafe worker behaviour, exposure to the harsh weather and other factors (Griffith and Howarth, 2001; Haslam et al., 2005; Manu et al., 2014). Particularly, in Sub-Saharan Africa, the occurrence of construction related injuries and fatalities persist in spite of Government sanctioned H&S standards (Idoro, 2008). Poor H&S performance remains at high levels as evidenced by a high number of injuries and work related illnesses. As a result there has been increased acknowledgment of the need for adopting H&S management practices that could help improve the situation. Despite improvements realised through the adoption of these H&S management practices in developed countries, it remains unclear the extent to which such practices are implemented by Nigerian construction firms. This study thus sought to address the research question of, “*what is the extent to which H&S management practices are implemented by contractors in Nigeria*”. The study commences with an overview of the status of H&S in Nigeria's construction industry as well as a review of H&S management. This provides the foundation for the empirical phase of the study which is followed by the research findings and concluding remarks.

2. Health and Safety in Nigerian Construction Industry

Nigeria, being the most populous country in Africa and also the largest economy in Africa (World Bank, 2016), its construction industry plays an important role in the nation's economy. In 2012 the sector's contribution to national gross domestic product stood at 3.05% and in that same year the sector employed circa 6.9 million workers (National Bureau of Statistics, 2015). In spite of the socio-economic significance of the construction sector, it has an enviable reputation in terms of occupational health and safety. Accident and injury rates in developing countries like Nigeria are generally considered to be higher than in the developed countries (see Hämäläinen et al., 2009). This has been attributed to a lack of appropriate consideration of H&S management measures or practices in construction project delivery process (Belel and Mahmud, 2012). Despite being a party to the Geneva Occupational Safety and Health Convention 1981, Nigeria continues to lag behind in the implementation occupational H&S practices (Adeogun and Okafor, 2013). According to Idoro (2011) contractors with the best safety records in Nigeria still record substantially high numbers of injuries on their sites. A survey of 42 Nigerian contractors revealed such poor performance with rates such as 5 injuries per worker and 2 accidents per 100 workers even among some of the best performing firms (Idoro, 2011). According to Ezenwa (2001) these figures are often even worse in practice as a result of a culture of under-reporting and concealment. Other studies have further highlighted a high prevalence of non-compliance with safety regulations that require organisations to report accidents (Diugwu et al. 2012).

Whilst there have been occupational health and safety legislations governing work and work environments in Nigeria (e.g. Factories Act of 1990 and Employee's Compensation Act of 2011), some have attributed the poor safety performance to dysfunctional H&S laws and regulations (Diugwu et al. 2012). Compliance to and enforcement of occupational health and safety legislations have generally been described as poor (Idubor and Oisamoje, 2013; Okojie, 2010). Idoro (2004) also linked the country's poor H&S status to lack of concern, lack of accurate records and poor statutory regulations. Furthermore, these studies have generally highlighted the limited scope of H&S management by organisations which could be contributing to the poor H&S performance.

3. Health and Safety Management

Effective H&S management has been identified to have direct impact on H&S performance and resultant reductions in the number of incidents (Lingard and Rowlingson, 2005). According to Fewings (2013), good H&S performance in the construction industries of developed countries can largely be attributed to systematic implementation of H&S management practices stipulated in H&S management systems (Fewings, 2013). Gallagher (1997) further identifies the need for the adoption of the following practices in order to improve H&S performance: high level of senior management commitment; occupational health and safety (OHS) responsibilities known; encouragement of supervisor involvement; active involvement of a H&S representative who has a broad role; effective OHS committees; planned hazard identification, risk assessment and hazard elimination control; and comprehensive approach in inspections. In order to effectively implement H&S management practices there is a need for the adoption of an appropriate H&S management framework/system. One of the most commonly cited frameworks is the UK Health and Safety Executive's (HSE) framework for managing H&S (HSE, 1997). The key elements in this framework are H&S policy, planning, organising, risk assessment, implementation, measuring performance and review (see Table 1). This framework is similar to the BS OHSAS 18001: 2007 (BSI, 2007) and it has recently been revised to follow Deming's plan-do-check-act model (HSE, 2013) as shown by Table 1. Similar elements to the HSE's (1997, 2013) frameworks have also been shown by other H&S management models including the International Labour Organisation guidance (i.e. ILO OSH 2001) (ILO, 2001).

Table 1: Key H&S Management Elements

Management Practice Area/Element	Management Practice sub-area/element *	Description and examples of practices*
Plan	Policy	<i>Written in-house H&S policy statement reflecting management's concern for H&S and detailing principles of actions to achieve H&S objectives e.g. policy document</i>
	Planning	<i>Planning for effective resource allocation e.g. pre-project H&S plans.</i>
Do	Organising	<i>The structural system to manage health and safety e.g. human resources, financial resources and equipment.</i>
	Risk Assessment	<i>Evaluation of risks and establishing necessary H&S measures to</i>

		<i>avoid accidents e.g. risk assessments.</i>
	<i>Implementation</i>	<i>Actual implementation of programmes e.g. training.</i>
<i>Check</i>	<i>Measuring Performance</i>	<i>Verification of the extent to which goals are achieved e.g. performance measurements metrics to include H&S targets such as number of accidents.</i>
<i>Act</i>	<i>Management review/Auditing</i>	<i>Reviewing in order to improve entire system e.g. External consultant reviews.</i>

**Sources: (HSE, 1997; Griffith and Howarth, 2001; Lingard and Rowlinson, 2005; BSI, 2007; Kheni et al., 2008; Cheng et al., 2012; Fewings 2013; Hinze et al., 2013, HSE, 2013)*

Several studies have highlighted the importance of the above elements to H&S (e.g. Kheni et al., 2008; Cheng et al., 2012; Manu et al., 2013; Agumba et al., 2013; Hinze et al., 2013). With regards H&S in the Nigerian construction industry, studies have mainly focused on other aspects of H&S such as regulations or performance (e.g. Ezenwa, 2001; Idoro, 2004; Umeokafor et al., 2014). It is therefore unclear the extent to which the elements of H&S management and their associated practices are implemented by contractors in Nigeria. This study therefore investigates the H&S management practices implemented by contractors in Nigeria.

4. Research Method

This research adopts a positivist paradigm by relating with facts, observations and figures via mathematical descriptive analysis. The positivist philosophical world view is known to be adopted for studies of this nature. This world view asserts that “knowledge of a social phenomenon is based on what can be observed and recorded rather than subjective understanding” (Matthew and Ross, 2010, p.27). Resultantly, quantitative approach was adopted for this study through the use of a questionnaire survey (Fellows and Liu, 2008). This approach was deemed appropriate for this study since the main answer to the research question pertained to "what" health and safety management practices are implemented by Nigerian contractors. According to Fellows and Lui (2008) questions relating to 'what' are most appropriately dealt with through quantitative approaches. In order to investigate the H&S management practices of Nigerian contractors, contractors' personnel in management roles were targeted for administration of a questionnaire. These professionals were specifically targeted as they are most likely to possess the requisite knowledge and experience relating to the management of H&S within their organisations. The questionnaire solicited these practitioners responses about the implementation of the H&S management practices associated with the above elements by their organisations. The structure of the questionnaire was in three parts: A, B and C. Part A was designed to collect general respondent and company information. Part B inquired about the health and safety management practices of the responding organizations. Both parts were designed to collect structured data to be analysed quantitatively. In part C responded were allowed to provide their opinions about challenges to implementing the H&S practices through opened ended questions. This was designed to allow respondents to elaborate on responses as well as their views about potential solutions. As it was impracticable to cover the entire Nigeria (due to its size - 36 states in 6 geopolitical regions), the study focussed on the South Western

region which comprises 6 states. Due to difficulty in accessing an organised database/record of contractors in Nigeria, the participation of contractors was obtained via multiple channels including the Yellow Pages business directory and the lead researcher's contacts in the construction industry.

5. Findings

A total of 280 questionnaires were distributed to construction businesses within the target environment via electronic mail and hand delivery. A total of 129 questionnaires were returned. Out of the returned questionnaires, 14 were judged to be invalid (due to excessive missing data) leaving 115 useable questionnaires for the analysis. A sizeable number of respondents were construction managers, representing 42.60% of the total respondents. Others that responded were site managers (29.57%) and health and safety supervisors/managers (9.57%). Table 2 below gives a breakdown of the respondents' designated roles.

Table 2: Background of Respondents

<i>Respondents role</i>	<i>No.</i>	<i>%</i>
<i>Company director</i>	<i>17</i>	<i>14.78</i>
<i>Construction manager</i>	<i>49</i>	<i>42.60</i>
<i>H & S supervisor/manager</i>	<i>11</i>	<i>9.57</i>
<i>Project manager</i>	<i>4</i>	<i>3.48</i>
<i>Site manager</i>	<i>34</i>	<i>29.57</i>

40% of respondents had between five to ten years' experience working within the industry while 6.96% had over 15 years working experience. All the firms undertake private sectors works and 20% undertake public sector workers. A majority of the companies (i.e. 94.78%) undertake general building works and 42.61% undertake civil engineering works. Similar to the characteristics of construction firms in developed countries (e.g. UK, see ONS (2011)), most firms are small, having less than 50 direct employees (60.09%). While 24.35% employed between 51 to 100 direct workers, only 9.57% were large firms employing over 100 direct workers. A majority of the companies are relatively new with 66.09% of them operating for a maximum of 5 years. Only 2.61% of the companies have existed for over 15 years. Over 90% of construction firms do not have BS OHASA 18001 certification with only 7.83% possessing this certification.

5.1 H&S Management Practices by Contractors in South West Nigeria

The findings and discussion presented are based on the key areas or elements of H&S management as summarised in Table 1 above. In order to help identify the most widely implemented practices, the concept of academic degree performance is adapted to grade the survey results (e.g. UK masters, $\leq 49\%$ = weak; 50-69% = pass to merit; 70% + = very good/distinction). The level of implementation of the H&S management practices in Figure 1 and 2 were therefore categorised as: low (i.e. 0 - 49%); moderate (i.e. 50 - 69%); and high (70% +).

From this classification it was identified that the only elements of H&S management that have at least one practice being moderately or highly implemented are H&S policy, organising and risk assessment. This is presented in Figure 1 below.



Figure 1: Level of Implementation of H&S Management Practices within Policy, Organising, and Risk Assessment

5.1.1 H&S Policy

The survey revealed that half of firms have a formal company H&S policy statement. Top management involvement in H&S was observed to be low with only 18% of firms having a director with overall responsibility for H&S.

5.1.2 Organising for H&S

While some practices were performed by an appreciable number of construction firms (e.g. provision of health and safety communications to workers (62%) and displaying regulatory health and safety posters (60%) this was not reflected in other practices within this element of H&S management. Figure 1 above gives more details on the practices that have a low level of implementation.

5.1.3 Risk Management

The level of implementation of risk assessment practices amongst the companies was high or moderate for two practices and low for the others. For instance, whilst 90% of the companies inform employees about hazard before commencement of work, as low as only 13% review and update risk assessment during construction.

The results revealed very low levels of implementation of practices within the elements of planning and implementing, performance measurement, and review/auditing as summarised in Figure 2.

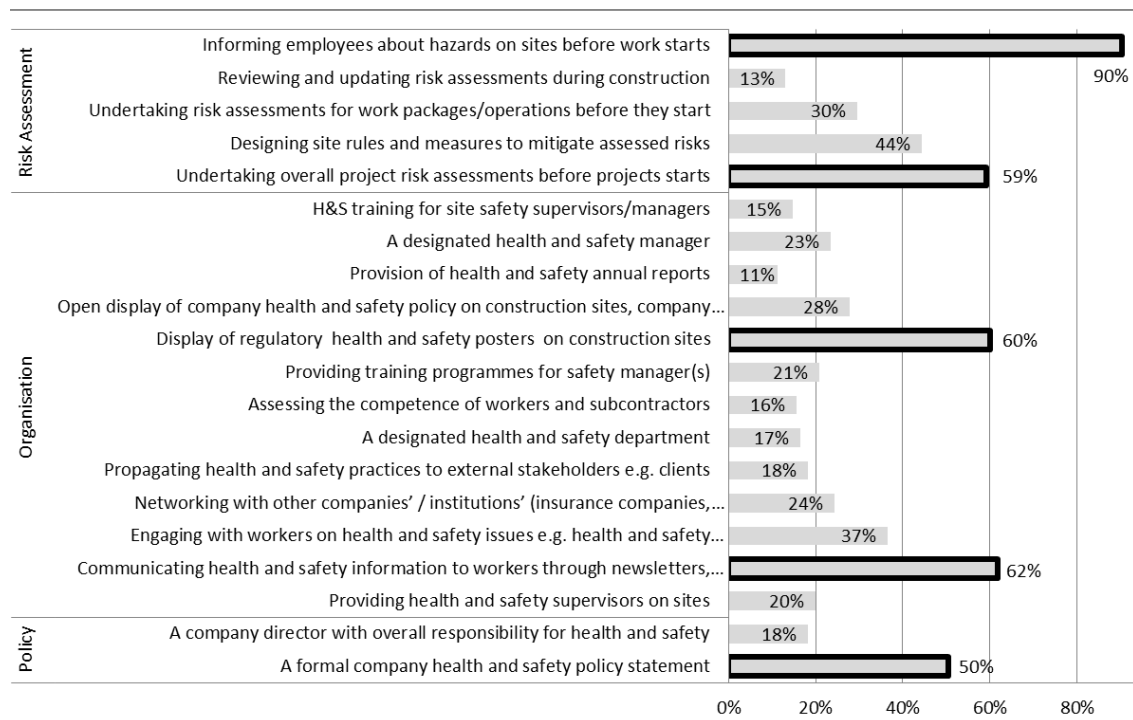


Figure 2: Level of Implementation of H&S Management Practices within Planning and Implementing, Measuring Performance, and Auditing

5.1.4 Planning and Implementing

None of the practices recorded over 40% with provision of sanitation and welfare facilities recording the highest level of implementation (i.e. 39%). Amendment and correction of health and safety plans during construction and rewarding of workers for safety behaviour however scored very low with 8% and 5% respectively.

5.1.5 Performance Measurement and Review

Similar to planning and implementing, none of the practices within this element recorded over 40% with publicising/sharing lessons learned from incident investigation recording the highest level of implementation (i.e. 18%). Keeping incident records on every project showed the lowest level of implementation (i.e. 10%).

5.1.6 Auditing

Similar to the above two elements, practices within this element of H&S management showed low levels of implementation with the highest being 20% for undertaking periodic safety management audits, and the use of in-house personnel for undertaking the audits.

5.2 Open Ended Responses - H&S Management Challenges

Challenges to construction H & S management was collated from the open responses. The challenges could be categorised under four main themes as given by Table 3.

Table 3: H&S Management Challenges

<i>Challenge</i>	<i>Sample Quote</i>
<i>Cost</i>	<p><i>"Only the bigger firms that land the plum contracts can afford it (certification and training). It's a luxury for small time contractors..." [Project manager].</i></p> <p><i>"We do our best with what we have and implement 'common sense' safety requirements" [H&S supervisor].</i></p> <p><i>"The cost and logistics of running onsite clinic facilities is out of the reach of most of us" [H&S supervisor].</i></p>
<i>Bureaucracy</i>	<p><i>"Reporting accidents to the authorities will often tie you down in red tape. The police and safety agencies just complicate things further" [Project manager].</i></p> <p><i>"Getting approval and accreditation for new safety standards takes a lot of time and money" [Project manager].</i></p>
<i>Poor public health infrastructure</i>	<p><i>"The government hospitals are poorly equipped and mostly on strike" [Site manager]</i></p>
<i>Poor enforcement and awareness</i>	<p><i>"I think it is unfair because while some of us put these requirements in place those that don't are not punished. Regulation that is not enforced is pointless" [Company director].</i></p> <p><i>"Many labourers do not wear protective clothing or know that they are supposed to. Even when these things are made available, they are not used properly" [H&S supervisor].</i></p>

6. Discussion

A cursory look at the results above reveals an overall poor H&S management amongst the participating companies. The structure of the participating companies mirrors the structure of construction companies in the construction industry of other countries as observed in the large number of the small and medium sized firms (about 84%) relative to their larger counterparts. Small-medium sized construction companies are described in Kheni et al. (2008) to be resource poor and barely able to survive in a capital intensive sector like construction. This is supported by the following comment regarding the cost of H&S management being a challenge for small companies: *"Only the bigger firms that land the plum contracts can afford it (i.e. certification and training). It's a luxury for small time contractors..."* [Project manager].

The BS OHSAS certification status of participating firms is also indicative of a sector where a large number of contractors lack the necessary policies, procedures and controls to effectively manage H&S. This correlates with research accounts in Idoro (2008; 2011), Kheni et al. (2008) and Umeokafor et al. (2014). The rather low involvement of top management in H&S is symptomatic of a low commitment of company management to protecting the H&S of workers. The importance of leadership support in management decisions and more specifically H&S

management is highlighted in Clarke (2013). Weak management commitment could undermine the other elements of H&S management and it is therefore not surprising that practices under planning and implementing, measuring and reviewing performance, and auditing recorded low levels of implementation (i.e. from 4% - 39%) amongst the surveyed contractors. The implementation of practices within the organising element range from low to moderate. Whilst there is moderate implementation of two practices (i.e. communicating health and safety information to workers through leaflets, newsletter and posters; and displaying regulatory H&S posters on site), there is low implementation of eleven practices indicating a generally poor outlook for the implementation of practices within this element of H&S management. This shows weak H&S management capacity with regards to organising for H&S which can lead to increased work related accidents. The poor outlook for practices within the organising element is out of sync with the situation in a similar developing country like Vietnam where Phung et al. (2015) and Nguyen et al. (2015) reported a moderate to high implementation for more practices within this element of H&S management. Whilst there appears not to be similar studies on the extent of H&S management practices implementation by contractors in a developed country context to aid comparison with the results from this research, it is expected that the situation in developed countries (e.g. UK and USA) would be relatively better given the better injuries record and health and safety regulation in these countries (see Hämäläinen et al., 2009; Abubakar, 2015). The implementation of the practices within the risk assessment element range from low to high. While there is moderate to high implementation of two practices, there is low implementation for three of the practices. That a low percentage of the companies undertake risk assessments prior to operations (i.e. 30%) and also review/update risk assessment during construction (i.e. 13%) shows that few companies take a proactive approach to dealing with H&S risks on projects. This could also have adverse consequences in terms of the occurrence of accidents, injuries and illnesses.

7. Conclusions

This research gives an insight into the H&S management practices of Nigerian construction firms, particularly those operating in the South Western Region. Results from the survey, although not generalisable to the entire Nigerian construction sector given the study's focus on a specific region, they suggest that very few H&S management practices are commonly implemented by contractors, particularly in the South Western Region. Generally, implementation of practices in all the key elements of H&S management appears to lagging. Elements that have a particularly gloomy outlook are planning and implementing, measuring performance and auditing. Action is needed by contractors to enhance H&S management in all the elements of H&S management. The support of state institutions and other relevant professional bodies (e.g. through provision of training programmes and awareness raising initiatives, and tightening of health and safety regulation) would be helpful. Public and private sector client organisations also have a key role in stimulating improvement in H&S management by including H&S requirements in procurement processes e.g. giving consideration to the health and safety competence/performance of contractors during contractor selection.

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