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Impediments to Construction Safety Improvement

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Abstract: Construction safety is one of the parameters for evaluating the success of a construction project. Evidence from the literature suggests that a poor health and safety (H&S) record is a matter of concern to project stakeholders. The benefits of improved H&S performance include, inter alia, increased productivity, reduced construction cost, reduced workplace accidents, and an enhanced industry image. This research seeks to determine major obstacles to project site safety in Nigeria. An understanding of these impediments provides an opportunity to develop strategies for H&S at construction sites. A questionnaire survey was used to address the objectives of the study, while descriptive statistics were employed to interpret the quantitative data obtained. The findings revealed that stakeholders' lack of commitment, ineffective H&S regulations, and inadequate H&S training among construction professionals are the major obstacles to H&S performance. This study provides in-depth knowledge by highlighting the significant obstacles to H&S practice. The research is limited to Nigeria and did not secure enough evidence to generalise its findings. Therefore, similar studies are required in other developing countries to compare the impediments to construction H&S in those countries to the findings of this study.

Keywords: Construction sector, safety performance, safety, Nigeria, obstacles in health and safety.

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1. Introduction

Low construction safety performance is a problem in both developing and developed countries. Lingard (2013) reports that the construction sector in developed countries employs a workforce of between 6% and 10%, but accounts for about 25% to 40% of work-related deaths. Also, it was reported that 17% of all accidents in the USA occurred at construction sites (Chi et al., 2013). Several studies, such as Okoro et al. (2016), Okorie and Musonda (2018), and Maiti and Choi (2019) highlight the H&S issues on construction sites). This statistical data shows that H&S is a risk to the image of the construction sector. Liu et al. (2018) opined that H&S elements are not included in contractors' pre-qualification surveys. Hence, it is essential to ameliorate the H&S performance of construction projects.

Several investigations have been conducted to accommodate project site safety. Research demonstrates that the adoption of safety management systems and H&S behavior-based systems have resulted in improved H&S performance (Wachter and Yorio, 2014). These measures have led to the emergence of "zero-injury" as a topical issue within the field of construction management. Empirical evidence further shows that the H&S performance of projects could be improved through the use of offsite construction, building information modelling and automation, among others (Karwowski et al., 1988; Pan et al., 2008; Benjaoran and Bhokha, 2010). A large and growing number of studies have focused on health and safety (H&S) in construction-related literature. Despite advances in the construction project management studies, construction sector in developing countries is slow in adopting new technologies (Grilo and Jardim-Goncalves, 2011). This rate of diffusion is partly responsible for the labour intensive nature of the construction sector, especially in developing countries. This exposes workers to hazards during the execution phase of construction projects. Durdyev et al. (2017) opine that H&S is not adequately considered in many developing countries. Hence, H&S related research provides evidence of efforts geared towards improving H&S practice in the sector. Regrettably, the industry still grapples with H&S challenges, which further results in high fatality rates in construction operations. Kukoyi et al. (2021) and Umeokafor and Isaac (2015) identified construction H&S problems being faced by stakeholders and the lack of H&S standards and regulations. Research evidence indicates that little knowledge exists on the vital components that inhibit improvements in project safety in Nigeria. An understanding of the impediments to project site safety is vital to engendering improved safety practice. The

awareness of the impediment would enhance an understanding of the weaknesses of the existing practice and contribute to evolving strategies for better safety performance. This study specifically focuses on providing insights into the improvements needed to foster the adoption of 'best' safety measures on project sites. To achieve the aim of this investigation, the question, what are the hindrances to effective H&S on construction sites in the construction industry was answered. An analysis of literature was carried out on construction H&S. The study created awareness of the obstacles resulting in low H&S in construction projects. In addition, it will be useful information for government bodies both at the national and state levels when developing policies and incentives designed at enhancing construction H&S on construction sites in Nigeria.

2. Obstacles to H&S Performance

Continuous improvements in H&S performance are a topical issue in the field of construction management (Abrey and Smallwood, 2014; Okorie and Musonda, 2018). This need could be attributed to the influence of construction safety on other project performance metrics, such as construction cost, construction duration and quality. Therefore, it is obvious that unsafe and unhealthy practices in construction projects affect project outcomes. Accidents caused by unsafe acts lead to an increase in costs, and this situation is due to productivity losses (Ismail et al., 2012). Similarly, Li and Poon (2013) found that a significant amount of financial resources are spent on compensation and litigation due to accidents. This increase in project cost has a significant negative impact on, inter alia, clients' return on investment (ROI), contractors' profits and insurance premiums. Other negative consequences include the negative effects on productive capacity, the reputation of the construction industry, human tragedy, long-term illnesses (such as musculoskeletal disorders), equipment damage, and demotivating of construction workers (Kukoyi and Smallwood, 2016). Therefore, the need to know the factors affecting the implementation of construction site safety. A number of construction research findings on construction safety performance have been published. It has been demonstrated that accidents and injury rates are used to determine the H&S performance of a construction site. However, accidents are now viewed to be caused by series of factors that could be determined and controlled.

From a qualitative study, Wachter and Yorio (2014) identify practices that are required for effective site safety. These practices include before and after activity H&S assessments; H&S task measures; engaging for H&S; teamwork encouragement; worker involvement in employing H&S measures; H&S tutoring; statements and knowledge exchange; accident investigation; performance check; and H&S duties. However, project site safety in emerging economies is low due to inadequate safety practices (Awwad et al., 2016). Koehn et al. (1995) are one of the early studies on H&S in emerging economies. More recent literature, such as Awwad et al. (2016) identify three reasons for low safety routine in Lebanon to be top management commitment; H&S regulation and enforcement; and training competence and awareness of workers.

Studies such as Smallwood (2013), Hadjimanolis and Boustras (2013) identify management inadequate commitment as a challenge to H&S performance project sites. Stakeholders' commitment to H&S is determined by scholars to have an influence on H&S (Kukoyi et al., 2021). Tam et al. (2004) note the lack of PPE, poor H&S awareness and inadequate funds for safety are barriers to H&S performance. Similarly, Zahoor et al. (2016) and Wong and Soo (2019) identified training, non-inclusion of H&S in contract documents, and workers' non-involvement in H&S planning, the role of government, affects H&S performance on sites.

Furthermore, the H&S performance gap between developing and developed countries are a lack of management commitment, lack of supervision, the difference in H&S training and competencies level on construction sites, and weak regulatory systems in developing countries (Awwad et al., 2016). Furthermore, the difference in construction safety implementation in developing countries as compared to developed countries to be workers lacks adequate H&S training, inadequate of safety awareness, extensive subcontracting, inadequate first-level administration commitment, non-existing safety regulations. Developed countries have adequate H&S training for workers, management commitment, adequate H&S regulations, and adequate enforcement of the H&S laws. Table 1 shows a comprehensive literature review of the obstacles to H&S performance in developing countries. From Table 1, the obstacles are similar across the countries. This may be due to the poor H&S laws and the inadequate enforcement of the laws.

3. Research Methods

Several methods have been used to investigate problems focused on construction site safety. The methods utilized in previous studies include questionnaire surveys (Aksorn and Hadikusumo, 2008), interviews (Gambatese et al., 2005) and ethnography (Wadick, 2010), among others. The choice of research approach is dependent on the nature of the problem being investigated (Sekaran, 2003). The collection of data from a group of participants within a limited time is one of the advantages of the questionnaire survey (Creswell, 2012). The survey instrument was used to evaluate the obstacles to improvements in the H&S performance in Nigerian construction projects. The survey instrument was used to collect data from professionals currently employed in the Nigerian construction sector.

The questionnaire was developed in three stages. First, a comprehensive review of the literature was undertaken to identify the obstacles to H&S performance. The identified variables were included in the questionnaire. Second, the survey instrument was piloted among construction consultants. This stage ensured that the instrument captured the obstacles to developments in safety performance in projects executed in Nigeria. Finally, the questionnaire was administered to a sample of construction professionals working in Nigeria. The questionnaire consists of part A, which is the general information of the respondent and part B, which consists of twenty-one statements. Likert scale was used to determine to what degree respondents passive the barriers. A scale of 1 to 5, which represents strongly disagree to strongly agree, was used so that the statistical analysis could extract the important obstacles to effective H&S performance. The mean score for the data was ranked to examine significant barriers to effective H&S performance. Lagos state was chosen for the study because of the large ongoing construction work in the state and a large number of construction companies have their head offices in Lagos State (Dosumu and Iyagba, 2013).

Table 1. Obstacles to effective H&S performance

Authors	Country	Obstacles to effective H&S performance from previous studies
Koehn et al. (1995)	India	Work pressures; ignorance on part of workers; ineffective institutional structures; and bureaucracy
Toole (2002)	USA	Worker's attitude; H&S training; lack of PPE; design errors; supervisor's behaviour
Tam et al. (2004)	China	Lack of PPE; inadequate H&S behavior; poor H&S awareness of top management/ managers; lack of training; reluctance to input resources to H&S
Haslam et al. (2005)	UK	Construction design and processes; project management; H&S education and training, and client and economic influences
Choudhry et al. (2008)	China	Behaviour influenced by ignorance; lack of H&S information; nonchalant attitude to H&S procedures; attitudes towards H&S; unhealthy and unsafe work conditions; inadequate H&S knowledge and poor work conditions
Hadjimanolis and Boustras (2013)	Cyprus	Lack of H&S training; poor H&S policies; organisation commitment to H&S; level of education; worker years of experience; job satisfaction; poor work attitude; and firm size
Cheng et al. (2012)	Hong Kong	Management practices; regulations; workers' behaviour, H&S mechanism; H&S inspection; risk perception; worker's H&S behavior; PPE; training; H&S awareness
Fang and Wu (2013)	China	Peer pressure; H&S policies; worker involvement; safety practice; awareness; safety culture; supervisors' influence; work environment; workers' risk awareness
Smallwood (2013)	South Africa	Inadequate top-level commitment; lack of adequate supervision; inadequate H&S training; inadequate H&S commitment; personal appreciation of hazards and risks; work pressure; preoccupation of cost, quality and time; lack of awareness; low level of respect for people; lack of stakeholders awareness; low level of H&S reporting; composition of small contractors in the industry; lack of appropriate guidelines to legislation and regulation; lack of expertise and resources; superficial H&S statistics
Feng et al. (2014)	Australia	H&S communication; management commitment; accident rates; PPE; H&S budget; incentives; competence; work overtime; project size; perception of risks; workers involvement; work environment; H&S regulation
Pinto et al. (2011)	Portugal	Inadequate hazard and risk assessment; H&S training; communication; management commitment; size of firm; workers' involvement
Wachter and Yorio (2014)	USA	H&S awareness; work environment; poor supervision; work pressure; PPE
Guo and Yiu (2016)	UK	Management H&S practices; training; H&S procedure; communication; accident rates; worker engagement; H&S budgets
Choudhry (2015)	China	Accident reporting; stakeholders' influence; H&S training; work environment; regulation
Choudhry and Zahoor (2016)	China	Management H&S practices; perception of risk; accident rates; regulation; workers' behavior; work schedule; worker involvement; work environment;
Awwad et al. (2016)	Lebanon	Equipment; H&S budgets; education and budgets; H&S regulation, H&S training; workers' exposure to risk; H&S meetings, and contractors not bound to submit H&S plans before work begins
Zahoor et al. (2016)	Pakistan	Extensive subcontracting; absence of H&S training; inadequate H&S awareness
Durdyev et al. (2017)	Cambodia	Ineffective H&S regulation and legislation; top-level commitment; inadequate H&S officers; inadequate PPE; inadequate safety monitoring
Yap and Lee (2019)	Malaysia	Safety training; non-inclusion of H&S in contract document; workers' non-involvement
Wong and Soo (2019)	Malaysia	Workers' behaviour; top management; poor policies and legislations; protective work clothing; worker's H&S commitment; H&S behaviour equipment safe keeping, personal protective equipment; role of government, signs, signal and barricades; and H&S education and training

Due to the difficulty in accessing an organised database record of contractors and consulting firms, the respondents were drawn from the database of construction companies registered with the Lagos State Ministry of Works and Housing. The criteria for purposive selection of respondents was based on accessibility and availability on site. This method resulted in a high response rate in the study. Out of the 70 questionnaires administered, 63 were valid for use. Out of the 63 respondents, 48% were consultants, and 52% were contractors. 21% of the surveyed had within 1- and

10- years work experience; 33% between 11 and 20 years, 29% between 21- and 30 years, and 18% above 30- years of work experience. This indicates a spread of professionals with good work experience represented in the survey. All the respondents had a bachelors' degree in construction-related courses.

4. Analysis and Discussion of Findings

4.1. Results of Ranking Analysis

Mean scores (MSs) were used to rank the 21 obstacles to effective safety performance. Table 2 shows the most significant obstacle to construction project site safety is 'inadequate legislation and regulation', which ranked highest with an MS of 4.25, 'inadequate safety officers' ranked second. 'Corruption', 'poor H&S monitoring', and 'safety awareness' ranked third, fourth, and fifth with MSs of 4.00, 3.78, 3.75, respectively. In terms of the least ranked obstacles, 'extensive sub-contracting', 'high level of unemployment', 'culture', 'work pressures', and 'lack of worker participation in H&S' ranked 17th, 18th, 19th, 20th and 21st with MSs of 2.43, 2.41, 2.32, 2.24, and 2.19, respectively.

Table 2. Ranking of obstacles

Barriers	Mean	Rank
Inadequate legislation and regulation	4.25	1
Inadequate H&S officers	4.02	2
Corruption	4.00	3
Poor H&S monitoring	3.78	4
Poor H&S awareness	3.75	5
Inadequate H&S training	3.62	6
Workers low level of education	3.35	7
Lack of respect for people	3.32	8
Reluctance to include H&S in the contract document	3.29	9
Low level of H&S reporting	3.21	10
Stakeholder H&S commitment	3.02	11
Poor work attitude	2.87	12
Poor H&S behaviour	2.69	13
Weak legal system	2.58	14
Lack of supervision	2.51	15
Focus on profit	2.46	16
Extensive sub-contracting	2.43	17
High level of unemployment	2.41	18
Culture	2.32	19
Work pressures	2.24	20
Lack of worker participation	2.19	21

4.2. Factor analysis

Factor analysis is a method used to group variables into clusters of high inter-correlations (Ho, 2014). In the current study, factor analysis was used to reduce barriers into manageable features. Barlett's test of sphericity is 526.522, with an accompanying impact level of 0.000, which implies population correlation matrix is not an identity distictive matrix. The value of the Kaiser Meyer Olkin (KMO) measure of accuracy is 0.619, which is greater than 0.5 (Ho, 2014). The two results indicate that factor analysis is adequate.

According to Ho (2014), factor loadings that enable interpretation of variables should range between 0.3 – 0.4. This is considered to "*meet the minimal level of practical significance*" (Ho, 2014). This investigation assumed a factor loading of 0.4 in the SPSS software; therefore, all loadings above 0.4 were retained. Four factors with eigenvalues greater than one were mined over the principal component analysis (PCA), responsible for a complete alteration of 38.55% (Table 3). The factor matrix after rotation is presented in Table 4. All 21 statements belonged to only one of the four factors.

Table 3. Total variance explained for extracted factors

Factor	Total	% of variance	Cumulative %
1	2.400	11.430	11.430
2	2.086	9.934	21.364
3	1.860	8.850	30.219
4	1.749	8.339	38.549

Table 4. Results of rotation

Barriers	1	2	3	4
Poor H&S awareness	0.653			
Corruption	0.638			
Low level of H&S reporting	0.615			
Low level of education for workers	0.524			
Poor H&S monitoring	0.494			
Focus on profit		0.743		
Poor work attitude		0.558		
Work pressures		0.545		
Lack of H&S training		0.542		
Culture		0.430		
Extensive sub-contracting		0.365		
Poor H&S behaviour			0.610	
Weak legal system			0.604	
Lack of supervision			0.575	
Inadequate legislation and regulation			0.569	
Stakeholders' lack of commitment			0.400	
Reluctance to input H&S in contract document				0.616
Low level of respect for workers				0.495
Lack of H&S officers				0.470

The four-component solutions that encapsulated the 21 variables are listed in Table 4. Five of the elements belong to factor 1, six others to factor 2, five belong to factor 3, and four variables belong to factor 4. The factors can therefore be renamed as:

- Construction safety education and training;
- Top management;
- Construction safety legislation and regulation, and
- Construction stakeholders influence.

Factor 1*: *Construction safety education and training

Construction safety education and training factor consist of five variables, namely poor H&S awareness, corruption, low level of H&S reporting, low level of education for workers, and poor H&S monitoring. The five factors focus on the training and education of construction stakeholders. This factor is responsible for 11.43% of the complete alteration (Table 3). Poor H&S awareness as a barrier has a high loading of 0.653.This reflects the significance of this factor to construction site safety.

Corruption as well as low level of reporting, low level of education, and poor H&S monitoring clearly reflects the low level of education and training in the built environment. This supports the findings of Umeokafor et al. (2014), describing the effects of corruption in implementing and enforcing H&S regulations. Improvements in safety performance on project sites may be achieved with developments in H&S education and training in the built environment. Also, when accidents, incidents and near misses are adequately reported and documented, adequate policies are effected. Workers low education affects workers' ability to understand the importance of H&S to their health and wellbeing, therefore, leading to poor H&S practice on-site (Hadjimanolis and Boustras, 2013). Adhering to construction laws and regulations by construction stakeholders, depends on the H&S education and training received. This translates to the level of H&S awareness hence, leading to unhealthy and unsafe construction practices and methods.

To eliminate this category of barriers to effective H&S performance, the need to introduce a basic form of education for workers that will enable H&S to be communicated effectively is vital. This will enable adequate H&S awareness that will prompt proper H&S reporting and eliminate corruption in the system. Hence, adequate H&S statistics will be developed for effective policies to be developed and implemented. Prompting adequate monitoring of construction sites internally and from the external (regulatory bodies) to achieve effective H&S performance set goals.

Factor 2*: *Top management

The second factor consists of five statements. They include focus on profit, poor work attitude, work pressures, lack of H&S training, and culture. This factor is responsible for 9.93% total variance (Table 3). This signifies its importance amongst other variables. Contractors' focus on profit has been reported as one of the hindrances to H&S performance on construction sites. Although making a profit is an important factor to contractors, too much focus on profit will reflect on their H&S planning laid on productivity and deadlines (Othman, 2012). Various studies report the need for top management to train workers to understand and appreciate the necessity of working healthy and safely. Other variables in this factor include poor work attitude, culture, and lack of workers' participation. This finding relates to safety categories which influence worker behavior patterns (Khosravi et al., 2014). The study emphasizes the strong association between the organisation, management and the individual characteristics with unsafe behavior and accidents. Khosravi et al. (2014) suggest the need for adequate training and the importance of society, organisation, and management in reducing poor work attitudes leading to accidents on construction sites. These barriers can be addressed at the management level. When top administration is committed to driving a positive construction safety culture, efforts should be employed to get workers committed to achieving defined H&S standards. This results in both the top and bottom management engaging in the best H&S practices.

Factor 3: H&S policies and regulations

This factor consists of five items relating to extensive sub-contracting, poor H&S behavior, the weak legal system, lack of supervision, and inadequate legislation and regulation. This factor accounts for an 8.85% total variance (Table 3). The legal framework is an important element for employing H&S 'best' practice in the construction process. The policies and regulations would spell out the requirements relating to the required construction qualifications, construction H&S codes, safety standards, safety regulations, and safety policies. This will guide the activities and behavior of all construction stakeholders during the entire construction process.

The place of legislation and regulation as a strategy for improving H&S has been acknowledged in previous research. For instance, inadequate H&S legislation and regulation is described as one of the factors that impede the activities of the Nigerian labour and productivity inspectorate division in monitoring construction site safety (Umeokafor and Isaac, 2015). Similarly, Smallwood (2013) and Kukoyi and Smallwood (2016) mention that the industry lacks appropriate guidelines to legislation and regulations. This implies that, with the lack of legislation and regulation, the legal process will be weak, and defaulters may not be adequately prosecuted or adequate penalties enforced. Lack of adequate supervision has been linked to H&S compliance and workers' poor H&S behaviour (Kapp, 2012). Adequate supervision of workers promotes adherence to H&S regulation and a healthy and safe work environment. This finding supports the study on developing policies to advance construction safety culture.

Adequate legislation and policies may encourage implementation of H&S 'best' practices during construction activities. The construction industry in the United Kingdom, United States, and South Africa, for example, have implemented H&S laws and regulations for contractors to promote safety measures on project sites. Although, Lagos State Safety commission recently introduced the 'vision zero,' this cannot guide the entire project site. Hence, H&S laws and regulations specific to the construction industry are required.

Factor 4: Construction stakeholders' influence

This factor consists of four variables, namely: stakeholders' lack of commitment, reluctance to input H&S in the contract document, low level of respect for workers, and lack of H&S officers. This factor represents 8.34% of the total variance (see Table 3). Stakeholders' lack of obligation to H&S inhibits safety practice on construction

sites. Reluctance to input H&S in contract documents results in stakeholders not regarding safety as vital. This may be linked to the inaccuracy that construction site safety leads to project cost overruns (Choudhry and Zahoor, 2016). A low level of respect for workers is another obstacle to H&S performance on project sites. For example, not providing welfare facilities inter alia restrooms, medical facility, food canteens, baths may lead to unhealthy and unsafe work behaviour. Stakeholders' influence is documented in several studies such as Smallwood and Haupt (2007), Musonda et al. (2012), Wu et al. (2016), and Kukoyi et al. (2021) as important in achieving an effective H&S performance on construction sites. Hence, healthy and safe management of a project lies in stakeholders' positive H&S influence.

5. Conclusion

The current study was conducted to examine the impediments to improvement in the H&S performance of construction projects. A survey was carried out in the construction sector in Nigeria to achieve the goal of this research. The three most important barriers to improvement in H&S performance of construction projects are 'inadequate legislation and regulation', 'lack of H&S officers' and 'corruption'. Also, factor analysis was used to group these barriers into four groups: H&S education and training; top management; H&S policies and regulations; and construction stakeholders' influence.

From the findings of the current study, legislation and ethics are key strategies for improving the H&S performance of construction projects in Nigeria. This assertion emanates from the findings of the survey. Legislation should address issues relating to terms of employment, training of construction workers, duties and responsibilities of stakeholders in the construction process, and penalties for defaulters. Findings also suggest the need for training and re-training of construction professionals on ethics, and H&S. This can be achieved through continuous professional development programmes by professional bodies. Further, educational institutions (vocational and tertiary) should constantly update the content of their courses to reflect new and emerging knowledge relating to H&S practice. The current study provides a better understanding of the impediments limiting the impact of H&S performance improvements. Improved H&S performance would address poor outcomes of construction projects. This improvement is beneficial to all project stakeholders.

There are obvious limitations that inhibit the capacity to generalise the results of survey research. These drawbacks could arise due to the low response rate, and respondents being biased. However, the sample for the study was drawn from construction professionals and the piloting of the survey instrument ensured that the findings are robust and reliable. The outcome of this study provides insights into significant factors to H&S performance in order to establish approaches towards H&S planning and executing construction projects. This could serve as a benchmark for the interpretation and validation of studies. Future research might adopt the use of action research. This would provide a platform for assessing the effectiveness of using strategies proposed in the literature to improve H&S performance in construction projects. This would provide valuable knowledge for improving the practice of construction management.

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Appendix 1

The survey instrument was developed in three stages. First, an in-depth review of the literature was undertaken to ascertain the obstacles to H&S performance. The selected factors were included in the questionnaire. Second, the developed questionnaire was pre-tested and piloted with experienced construction professionals. This stage ensured that the instrument captured the obstacles to developments in H&S performance in the construction of construction projects executed in Nigeria. Finally, the questionnaire was administered to a sample of construction professionals working in Nigeria. The questionnaire consists of part A, which is the general information of the respondent and part B, which consists of twenty-one statements. A scale of 1 (Strongly disagree) to 5 (Strongly agree) was used so that the statistical analysis could extract the important obstacles to effective H&S performance. The mean score for the data was ranked to examine significant barriers to effective H&S performance.

Survey Questionnaire

Please tick (√) in a cell to indicate your response.

Part 1: General Information

1. Please indicate your stakeholder group:

Architect		Engineer	
Construction manager		Quantity surveyor	
Client		Project manager	
Contractor		Other (specify)	

2. Age of respondent:
   _____ Years _____ Months
3. Mode of operation

Consultant	Contractor

4. Years of experience in the construction industry.
   _____ Years _____ Months
5. Please record the length of time your firm has been operating.
   prequalification _____ Years _____ Months
6. Naira amount of your firm's average annual turnover.
   Amount _____

Part 2: Obstacles to effective H&S performance

On a scale of 1 (minor) to 5 (major), to what extent are the following barriers to health and safety performance (Please note the 'unsure' (U) and 'does not' (DN) options)

Factor / Issue	U	DN	Minor…Major				
			1	2	3	4	5
Poor work attitude	U	DN	1	2	3	4	5
Lack of worker participation	U	DN	1	2	3	4	5
Stakeholder H&S commitment	U	DN	1	2	3	4	5
Low level of H&S reporting	U	DN	1	2	3	4	5
inadequate H&S training	U	DN	1	2	3	4	5
Reluctance to include H&S in the contract document	U	DN	1	2	3	4	5
Extensive sub-contracting	U	DN	1	2	3	4	5
High level of unemployment	U	DN	1	2	3	4	5
Culture	U	DN	1	2	3	4	5
Inadequate legislation and regulation	U	DN	1	2	3	4	5
Lack of supervision	U	DN	1	2	3	4	5
Work pressures	U	DN	1	2	3	4	5
Poor H&S awareness	U	DN	1	2	3	4	5
Lack of H&S officers	U	DN	1	2	3	4	5
Corruption	U	DN	1	2	3	4	5
Poor H&S behaviour	U	DN	1	2	3	4	5
Workers low level of education	U	DN	1	2	3	4	5
Weak legal system	U	DN	1	2	3	4	5
Focus on profit	U	DN	1	2	3	4	5
Poor H&S monitoring	U	DN	1	2	3	4	5