



Comparative study of impact of occupational health and safety culture on project performance in Nigeria and South Africa: A case study

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Abstract

This research study is aimed at comparing the Nigerian Construction Industry with that of South Africa, two similar developing Countries in the areas of Technological advancement, Business potential, Human potential and Industrial activities. The study centred on what is obtainable in the two Countries in the aspect of Performance of Occupational H&S Culture on Safety Performance; Project Parameters as they affect Project Performance; best H&S Practices; Institutional Regulation and Government Legislation on Health and Safety Culture; and Pre-contract safety plans and thus highlights areas of differences and similarities. Data were obtained and analyzed for Nigeria case using structured questionnaire through non-probability sampling but for South Africa historical data were audited from Journal articles on the above area of interest and objectives. The results of the findings from this comparative study are that; Nigeria construction workers do not report unsafe and unhealthy working conditions which by implication is that records of construction accident, injuries, fatalities and hazards are not being taken and kept; Contractors and Engineers are the highest contributors to Project H&S in South Africa, whereas Project Managers and Contractors are the highest contributors to Project H&S in Nigeria. The two countries converging opinion is; Contractors as the major contributor to the practice and performance of Occupational H&S culture in the Construction worksite; Quality and Cost are a Project factor that has the greatest impact to negatively affect or improve the H&S performance of construction projects in Nigeria which is similar to what we have in South Africa; Client Satisfaction, Cost and Quality as a Project indicator for best H&S practices in construction projects in Nigeria which agrees with the South African survey. The recommendation suggested by this study to improving H&S Performance of Contractors are therefore; Facilitating Government and Construction Stakeholders involvement in H&S Policies, Regulation and Supervisions; Selecting Contractors based on Construction H&S Practices and Procedures; Requiring bills of quantities to include itemised provisions for H&S; and Specifying requirement for Project-Specific H&S Management Plans and Risk Analysis.

Keywords: Health and Safety; Nigeria; Organizational Culture; Project Performance; South Africa

1. Introduction

In Hampden (2001) cited in Molenaar, Brown, Caile & Smith (2002) defines corporate culture as, “a pattern of basic assumptions invented, discovered or developed by a given group as it learns to cope with its problems of external adaptation and internal integration that have worked well enough to be valid and to be taught to new members as the correct way to perceive, think and feel in relation to the problems”.

MacCollum (2006), defines a Hazard as an unsafe physical condition that is always in one of three modes: 1) dormant/latent (unable to cause harm); 2) armed (can cause harm); and 3) active (causing injury, death, and/or damage by releasing unwanted energy substances. The notion that the safety on construction worksites can be increased through better design is both intuitively appealing and supported by research indicating that better planning, scheduling, and design could reduce hazards on construction worksites (Whittington et al. 1992; Suraji et al. 2001; Gibb

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et al. 2004) as cited in (Weinstein, Gambactese & Hecker, 2005). Recognizing the importance of these factors in construction worksites safety, the European Union enacted the “Control of Hazard on Temporary and Mobile Construction Sites” directive that requires member states to adopt national laws to formalize a process to ensure that construction site safety is considered during the design process.

Acosta-Leon, Giote, Salem and Daraiseh (2005) opines “According to the Census of Fatal Occupational Injuries (CFOI) carried out in U.S, the rate of fatal occupational injuries in 2003 per 100,000 employed in industry by sector was 2.5 for manufacturing, 11.7 for construction, 26.9 for mining and 31.2 for the combination of agriculture, forestry, fishing and hunting.

Cekada, Janicak, and Ferguson (2009), studied the relationship between Employees and Contractors and concluded that, the fatality rates for contract employees not under an organization’s supervision were significantly higher than the fatality rates involving employees of the organization.

Ryan (2009), said successful organizations have learned that they must tap into employees’ collective knowledge to improve their processes. Such organizations actively seek workers input they consider it common sense to ask employees how things can be made better. Ryan further said that, companies with performance-enhancing cultures significantly outperform companies without such cultures.

Goodrum and Gangwar (2004), found that incentives are effective at improving many of the safety performance metrics used in construction and indeed a long-term improvement which also would reduce the direct cost of Construction Projects.

2. Nigeria and South Africa: occupational health and safety performance

Nigeria and South Africa are two colonized countries in Africa and are major players in the continent in-terms of Technological Advancement, Business potential, Human potential, and Positive economic growth.

Nigeria and South Africa situation would be closely studied in this research to unveil the H&S factors on; Management commitment; Communication and feedback; Supervisory environment; Supportive environment; Health and safety rules and procedures; Training and competence level; Workers involvement and personal risk appreciation; Work pressure; Source of awareness of construction regulations; role of participant and its influence on pre-contract safety plan. This being similar variables audited by The Construction Industry Development Board (cidb, 2010, 2012) and Smallwood & Haupt (2005).

Nigeria; Idoro, (2008) expressed that Nigeria construction industry lacks statutory regulations on H&S and that those regulations that serve as point of reference are either British or America ones and that there is absence of structures for recording and reporting H&S issues. He said further that provisions of the Factory Act of 1961 (Manufacturing industry) which serves as point of reference have made the Federal Government of Nigeria to put in place statutory practice and structures for inspecting the H&S condition of factories, for reporting accidents and injuries in factories and for sanctioning non-compliance with statutory H&S conditions and standards. Such regulations practice and structures do not exist in the construction industry therefore; contractors are left to use their discretion on such important issues. The consequences are that contractors commit little resources to maintaining a healthy and safe construction work environment; they do not keep accurate records of accidents and injuries on site and they do not report or release such information.

In view of the above issues the Nigeria construction companies has severally faced with the problem of non-performance of H&S culture vis-a-vis non-adherence to occupational health and safety standard at worksite, insufficient planning, insufficient safety-in-design processes to reduce risks on construction worksites, non involvement of employees in the occupational health and safety culture policy drafting, labour motivation as regard employers enactment of occupational health and safety culture, i.e. good healthcare scheme, construction parameters as it best H&S practices.

2.1. South Africa

In South Africa, while it is acknowledged that many industry associations and professional societies, contracting organizations and others have made significant efforts to improve H&S within the construction industry, overall construction H&S is not improving commensurately (cidb 2010). Notably, construction continues to contribute a disproportionate number of fatalities and injuries relative to other industrial sectors, and there continues to be high

levels of non-compliance with H&S legislation generally, and specially the construction and other H&S Regulations in South Africa like The Construction Industry Development Board (cidb). This comparative study has decided to adopt (cidb, 2010) because it extensively investigated and discussed H&S Regulations, Compliance and Stakeholders. However for updating purposes, the recent report are here below which focuses in other issues outside the purview of this study.

3. The updates of CIDB report

3.1. CIDB 2014

Government's efforts to improve the performance of the construction industry for efficient infrastructure delivery in order to raise the industry's contribution to social and economic development.

3.2. CIDB 2018 (Registration of Consultants and Contractors) (Amendment) Regulations 2018

Amended Fees for Mechanical, Electrical & Plumbing Services and Mechanical, Electrical & Plumbing Works.

3.3. CIDB 2018 (registration of Suppliers) Regulations 2018

Registration of Suppliers of Construction Materials, Plant and Equipment.

3.4. CIDB 2020

Monitoring and regulating industry performance including registration of projects and contractors.

Drawing on research findings carried out by cidb in South Africa, the report shows that at a legislative level, South Africa is not lacking in terms of H&S legislation. However, while the Construction Regulation has an impact, the Construction Regulations need to be amended to promote optimum H&S throughout all phases of a project, in particular the concept, initiation and detailed design phases. The report also notes that enforcement of the Construction Regulations is inadequate and that the OH&S Inspectorate is understaffed and lacks the requisite construction expertise.

Furthermore, there is a lack of comprehensive construction H&S statistics and the most recent statistics, available from the Compensation Commissioner, are for the year 1999 – and the Compensation fund is perceived to be “dysfunctional”.

At the organizational and site level, poor construction H&S performance is attributable to a lack of management commitment, inadequate supervision and inadequate or a lack of H&S training. A lack of worker involvement, personal risk appreciation and work pressure also contribute to poor performance (cidb 2010).

The cidb 2010 report also notes that specific attention needs to be given to small and emerging contractors, who typically have limited resources to provide for H&S and whose H&S processes will typically be less structured and based rather on prior contract experience. A developmental approach is needed to support this sub-sector of the industry.

The report then concludes with recommendations for improving construction H&S, inclusive of recommendations championed by cidb. The recommendations of the report are grouped into the following key areas:

- enhancing the impact of the Construction Regulations;
- using public sector procurement to achieve improvements in construction H&S;
- enhancing the understanding of the status of construction H&S in South Africa through the timeous provision of H&S information and statistics;
- establishing minimum competence standards and accreditation client appointed H&S agents in terms of the Construction Regulations;
- establishing of a “H&S Agency” as a focus point for the promotion, awareness, information, advice and promotion of research on construction H&S;
- building H&S capacity within relevant unions and facilitating closer working relationships between employers and union members to enhance construction H&S;
- ensuring that tertiary education addresses construction H&S and related issues; and
- facilitating a developmental approach to support the small and emerging contractors.

4. Research Method

Data for the research was obtained from primary source through administering of H&S structured questionnaire to Client Organization, Contractors and Consultant. Data was also obtained from secondary source through the published journal by Construction Industry Development Board (cidb, 2010) from South Africa. The comparison was possible by way of comparing the secondary source data findings with the result/findings from the data analysis exploited from the questionnaire (exploratory research). Basically, for uniformity and consistency of result comparison the questions of the cidb 2010 journals was formulated from its' findings and therefore integrated for this research, thus survey design was adopted.

The Characteristic of the population considered are Client Organization, Contractors and Consultant as earlier stated. The Sample size is not necessarily a representative of the population as a result of time constraint of delivering this comparative study, thus the sampling technique is non-probability sampling. The method of data collection is by hand, which necessitated physical visit to the various construction worksites around Lagos, Kaduna and Abuja.

The respond rate of the total of 30 questionnaires distributed was 100% although there may be 1 or 2 un-answered questions now and then. The summary of recovered questionnaires is 30.

The operationalization of the variables that was used in the descriptive statistic is hypothetical statement that is being measured in percentages for table 1 and 2. For table 3, Likert scale of; 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, 1 = strongly disagree.

The other tables scale corresponds to the secondary source for uniformity purpose as;

6=Very important, 5=Important, 4=Somewhat important, 3=Little importance, 2=Not important, 1=Unsure.

The questionnaire sought, amongst others objective on prevailing H&S concept: Construction Occupational H&S practices; Project delivery parameters, that is, H&S culture and H&S practices; Sources of awareness of Construction legislations and regulations; Extent of Stakeholders contribution to H&S; Performance of Occupational H&S culture on Project performance; and on Safety performance; Safety factor analysis effects on Preconstruction safety plans.

The questionnaire for Nigeria case study was self-administered. It is important to note that Nigeria has little or no secondary data on H&S records and regulation of its Construction industry (Idoro, 2004 as cited in Idoro, 2008) and so the researcher was challenged with the plight to publish secondary information as a way to address the decadence of H&S non-compliance in Nigeria construction industry.

The focus is to access H&S input on the above H&S conceptual frame work. The aim therefore is to highlight differences and Similarities and potential areas of improvement and bilateral cooperation between the two countries. It is also aimed at adding to the existing body of knowledge on the construction industry in both countries.

Opinions was sought from South and North of Nigeria from Stakeholders in Construction (Clients (Public/Private), Contractors, and Consultants) and also from major key actors in Construction administration like; Architects, Contractors, Engineers, Insurers, Project Managers, Private Sector Client, and Public Sector Client, Quantity Surveyors, and Others.

The approach used in the assessment and comparison of data as earlier stated in Research method above is now descriptive between Nigeria and South Africa.

5. Data Presentation and Discussion

5.1. Role in Construction Industry

The results of the statistical table below indicate that there are more Contractors than the other Construction participant. This occurrence percentage is approximately 59% and is true for a real life situation of what is applicable in the Nigeria Construction business environment.

Table 1 Role in Construction Industry

Participant	Frequency	Percent
Client organization	6	20.7
Contractor	17	58.6
Consultant	6	20.7
Total	29	100

6. Years of Experience in Construction Industry

There are younger Engineers on construction sites now a day than it was in the 1980's. The older ones are the present Project Managers. The less than 10 years working experience are 22 frequency out of 30 questionnaires administered. This percentage represents 75.8%, that is, 3/4 of the total studied population which is quite acceptable.

Table 2 Years of Experience in Construction Industry

Years	Frequency	Percent
None	3	10.3
less than 10 years	22	75.8
11-20 years	3	10.3
above 30 years	1	3.4
Total	29	100

7. Professional Background

The table below is the summary of the situation of what is obtainable in the Nigeria Construction Industry. What constitute the bulk of young supervisors on Nigeria construction worksites are the Civil Engineers and Quantity surveyors. This will also be very true if a larger Sample population is investigated. The two disciplines forms minimum of 1/3 of the total sampled population. Their combined population is estimated as; $37.9\% + 34.4\% = 72.3\%$ which also form 3/4 of the total studied population and tallies with the result of the Less than 10 years working experience of young Site Supervisors/Engineers as above (table 1). This result is valid.

Table 3 Professional Background

Profession	Frequency	Percent
architect	2	6.9
contractor	3	10.3
engineer	11	37.9
private sector client	2	6.9
quantity surveyor	10	34.4
other	1	3.4
Total	29	100

8. Comparison of H&S Practices in Singapore, South Africa and Nigeria

Contractor: Contractor H&S performance is influenced by a number of (internal) factors as below highlighted sub-headings. However, Idoro (2007) said, Safety performance is viewed in terms of a healthy and safe working

environment. Researchers used several factors to represent or measure H&S performance. In addition, H&S performance is influenced by upstream factors and specifically monitoring of compliance by the client’s agent.

In an international comparison, Nigerian contractors demonstrated better Management Commitment than South African except in areas like:

- The head office management addressing H&S issues.
- Workers are rewarded for good H&S.
- Nigeria construction Industry demonstrated a weaker Communication and feedback culture in the aspect of:
- Regular H&S meetings;
- Workers being encouraged to report unsafe and unhealthy behaviour and working conditions; This implies Nigeria construction workers do not report unsafe and unhealthy working conditions as cited in (Idoro, 2008) which implication is that records of construction accident, injuries, fatalities and hazards will not be taken and kept.

Nigeria Construction Industry has a weaker H&S Supervisory Environment except in the aspect:

- “H&S inspection which are done regularly and at least daily” which is likely to be un-true if an Hypothesis test is conducted;

Nigeria also has a poor Supportive Environment;

Health and Safety rules and Procedures:

- Nigeria does not have a written H&S Policy in place unlike their counterpart South African.

Training and Competence Level:

- Nigeria is backward in allowing workers to undergo H&S induction before they are allowed to start work; poor attitude to proper care and use of PPE; greatly required H&S education and training than their counterpart in South Africa.

Work Pressure

- Nigerian Construction firm is only concerned with getting the job done as quickly as possible
- Workers often work shifts or overtime in Nigeria than their counterparts in South Africa.

Comparison of H&S Practices in Singapore, South Africa and Nigeria

Table 4 Performance of Occupational H & S culture on health and safety performance

H & S Factors	S/A Mean	Nig. Mean
Management commitment		
The H & S of workers is important to the head office management	4.0	4.2
The head office management ensure compliance with H & S legislation and regulations	3.8	4.0
The head office management always address H & S issues	3.7	3.6
The head office management are intolerant of poor construction H & S	3.6	3.6
Workers are rewarded for good H & S	3.3	2.9
The firm penalizes workers for poor H & S	3.1	3.1
The head office management insists on the elimination of hazards	3.7	3.8
Communication and feedback		
We have regular H & S meetings	3.6	3.4

Workers are encouraged to report unsafe and unhealthy behaviour and working conditions	4.1	3.7
Results of H & S inspections are always discussed at H & S meetings	3.6	3.8
All workers are kept informed of the provisions of the H & S plan	3.4	3.8
Supervisory environment		
The firm employs trained H & S staff on projects	3.4	3.3
We have trained H & S representatives on site	3.7	3.2
H & S inspections are done regularly and at least daily	3.2	3.4
There is a general lack of proper supervision	2.8	2.8
Supportive environment		
Workers are responsible for the H & S of their fellow workers	3.8	3.4
Health and safety rules and procedures		
We have a written H & S policy in place	4.0	3.4
Each project has a project-specific H & S plan	3.6	3.8
Training and competence level		
All workers undergo orientation/induction before they are allowed to start work on site	3.7	3.5
Construction accidents are caused by unsafe worker acts or behaviour	3.7	3.8
Workers are trained in the proper care and use of PPE	3.7	3.4
More H & S education and training is needed	4.1	4.4
Workers are regularly trained in H & S	3.2	3.2
Worker's involvement and personal risk appreciation		
Workers have the right to refuse to work in unsafe conditions	4.3	3.9
Workers are responsible for their own H & S	3.5	3.4
Most workers on site view health and safety as important	3.7	3.3
Workers are involved with H & S inspections	3.3	3.3
Workers are consulted when the H & S plan is complied	2.9	3.3
Workers participated in the formulation of the H & S policy	3.0	2.9
Workers regularly report unsafe and unhealthy behaviour and working conditions	3.5	3.3
Work pressure		
The firm is only concerned with getting the job done as quickly as possible	2.9	3.5
Workers often work shifts or overtime	3.8	4.0

Scale 5 = strongly agree, 4 = strong, 3 = neutral, 2 = disagree, 1 = strongly disagree

Table 5 South Africa H&S factors ranking order

H & S Factors	South Africa Mean	Rank
Workers have the right to refuse to work in unsafe conditions	4.3	1
Workers are encouraged to report unsafe and unhealthy behaviour and working conditions	4.1	2
More H & S education and training is needed	4.1	2
The H & S of workers is important to the head office management	4.0	4
We have a written H & S policy in place	4.0	5
The head office management ensure compliance with H & S legislation and regulations	3.8	6
Workers are responsible for the H & S of their fellow workers	3.8	6
Workers often work shifts or overtime	3.8	6
The head office management always address H & S issues	3.7	9
The head office management insists on the elimination of hazards	3.7	9
We have trained H & S representatives on site	3.7	9
All workers undergo orientation/induction before they are allowed to start work on site	3.7	9
Construction accidents are caused by unsafe worker acts or behaviour	3.7	9
Workers are trained in the proper care and use of PPE	3.7	9
Most workers on site view health and safety as important	3.7	9
The head office management are intolerant of poor construction H & S	3.6	16
We have regular H & S meetings	3.6	16
Results of H & S inspections are always discussed at H & S meetings	3.6	16
Each project has a project-specific H & S plan	3.6	16
Workers are responsible for their own H & S	3.5	20
Workers regularly report unsafe and unhealthy behaviour and working conditions	3.5	20
All workers are kept informed of the provisions of the H & S plan	3.4	22
The firm employs trained H & S staff on projects	3.4	22
Workers are rewarded for good H & S	3.3	24
Workers are involved with H & S inspections	3.3	24
H & S inspections are done regularly and at least daily	3.2	26
Workers are regularly trained in H & S	3.2	26
The firm penalizes workers for poor H & S	3.1	28
Workers participated in the formulation of the H & S policy	3.0	29
Workers are consulted when the H & S plan is complied	2.9	30
The firm is only concerned with getting the job done as quickly as possible	2.9	30
There is a general lack of proper supervision	2.8	32

Table 6 Nigeria H&S factor ranking order

H & S Factors	Nigeria Mean	Rank
More H & S education and training is needed	4.4	1
The H & S of workers is important to the head office management	4.2	2
The head office management ensure compliance with H & S legislation and regulations	4.0	3
Workers often work shifts or overtime	4.0	3
Workers have the right to refuse to work in unsafe conditions	3.9	5
The head office management insists on the elimination of hazards	3.8	6
Results of H & S inspections are always discussed at H & S meetings	3.8	6
All workers are kept informed of the provisions of the H & S plan	3.8	6
Each project has a project-specific H & S plan	3.8	6
Construction accidents are caused by unsafe worker acts or behaviour	3.8	6
Workers are encouraged to report unsafe and unhealthy behaviour and working conditions	3.7	11
The head office management always address H & S issues	3.6	12
The head office management are intolerant of poor construction H & S	3.6	12
All workers undergo orientation/induction before they are allowed to start work on site	3.5	14
The firm is only concerned with getting the job done as quickly as possible	3.5	14
We have regular H & S meetings	3.4	16
We have a written H & S policy in place	3.4	16
H & S inspections are done regularly and at least daily	3.4	16
Workers are responsible for the H & S of their fellow workers	3.4	16
Workers are trained in the proper care and use of PPE	3.4	16
Workers are responsible for their own H & S	3.4	16
The firm employs trained H & S staff on projects	3.3	22
Most workers on site view health and safety as important	3.3	22
Workers are involved with H & S inspections	3.3	22
Workers are consulted when the H & S plan is complied	3.3	22
Workers regularly report unsafe and unhealthy behaviour and working conditions	3.3	22
We have trained H & S representatives on site	3.2	27
Workers are regularly trained in H & S	3.2	27
The firm penalizes workers for poor H & S	3.1	29
Workers are rewarded for good H & S	2.9	30
Workers participated in the formulation of the H & S policy	2.9	30
There is a general lack of proper supervision	2.8	32

9. Construction Parameters as they affect Project Performance of H&S Culture

The below field analysis shows that Cost and Quality as a Project factor has the greatest impact to negatively affect or improve the H&S performance of construction projects.

The order below are the Degree of Importance of various Project Performance indicator in relation to H & S Performance in Nigeria. This agrees with the South African survey by (cidb 2010, pg. 9, bullet 9).

- Effects of Project Cost on Project Performance of H&S Culture
- Effects of Project Quality on Project Performance of H&S Culture
- Effects of Project Time on Project Performance of H&S Culture
- Effects of Project H&S on Project Performance of H&S Culture
- Effects of Public HSE on Project Performance of H&S Culture

Table 7 Construction Parameters as they affect Project Performance of H&S Culture

Project Parameters	N	Mean	Rank
effects of project	30	5.67	1
cost on project performance			
effects of project quality on project performance	30	5.43	2
effects of project H&S on project	30	5.13	3
performance			
effects of project time on project	30	5.07	4
performance			
effects of public	30	4.90	5
HSE on project performance			

Source: Field work; Scale: 6=Very important, 5=Important, 4=Somewhat important, 3=Little importance, 2=Not important, 1=Unsure

9.1. Best H&S Practices

The Construction Regulations are currently being extensively reviewed as part of the ongoing effort to improve the H & S performance of the industry. The below field analysis shows that Client Satisfaction, Cost and Quality as a Project indicator for best H & S practices in construction projects in Nigeria which agrees with the South African survey by -

(cidb 2010, pg. 9, bullet 9). Also in agreement are Smallwood and Haupt (2005), findings from the perception survey conducted in South Africa which has Client Satisfaction to predominate in terms of the importance of various project parameters, followed by Quality, and Cost. Finally, Huang and Hinze (2006), with regards to "Best Practices" the involvement of Owners has been regarded as an essential requirement for zero injuries objective.

The below chart are the Degree of Importance of various Project Parameters to Best H & S Practices in Nigeria (For your information).

- Client Satisfaction as it affects Best H&S Practices
- Quality as it affects Best H&S Practices
- Cost as it affects Best H&S Practices
- Productivity as it affects Best H&S Practices
- Environment as it affects Best H&S Practices
- H&S Culture as it affects Best H&S Practices

9.2. Client Satisfaction as it affects Best H&S Practices

Client Satisfaction as it affect best H & S practices appears as below from the field data analysed. The result gave "Mean 5.30" as the highest respondent which implies that Client Satisfaction will go a long way in determining good or bad H

& S practices at worksite in Nigeria construction industry which is similar result with the South Africa industry as was reviewed in literature (cidb 2010, pg 17, “Clients”).

9.3. Quality as it affects Best H & S Practices

Quality as it affect best H & S practices appears as below from the field data analysed. The result gave “Mean 5.17” as the 3rd highest respondent which implies that Qualitative work done at any construction site tells the extent of adherence to best H & S practices at that worksite in any Construction industry. This is Fundamental everywhere always.

9.4. Cost as it affects Best H & S Practice

Cost as it affect best H & S practices appears as below from the field data analysed. The result gave “Mean 5.23” as the 2nd highest respondent which implies that more cost set aside or incorporated at Preconstruction stage for all possible risk analysis which tended towards Safety Design Planning by the H&S Designer will help prevent and reduce accident, injuries, hazards and fatalities at the construction site. Therefore, more cost implies best H & S practices at worksite in any Construction industry. This is Fundamental everywhere.

9.5. Productivity as it affects Best H & S Practices

Productivity as it affect best H & S practices appears as below from the field data analysed. The result gave “Mean 4.77” as the 6th and last respondent which implies that Productivity is not Significant among Parameters that affect best H & S practices at worksite in Nigeria construction industry.

9.6. Environment as it affects Best H & S Practices

Environment as it affect best H & S practices appears as above from the field data analysed. The result gave “Mean 4.83” as the 5th highest respondent which implies that Business Environment may not really affect H&S way of life or perception of a set of people. This is Universal and Logical.

9.7. H & S Culture as it affects Best H & S Practices

H & S culture as it affect best H & S practices appears as above from the field data analysed. The result gave “Mean 4.90” as the 4th highest respondent which implies that H & S not use as way of life will and always affect best H & S practices at worksite in Nigeria construction industry which is similar result with the South Africa industry as was reviewed in literature (cidb 2010, pg 9, bullet 6).

Table 8 The Level of Importance of Parameters as it affects Best H&S Practices

Project Parameters	N	Mean	Rank
Client satisfaction as it affect best H&S practices	30	5.30	1
Cost as it affect best H&S practices	30	5.23	2
Quality as it affect best H&S practices	30	5.17	3
H&S Culture as it affect best H&S practices	30	4.93	4
Environment as it affect best H&S practices	30	4.83	5
Productivity as it affect best H&S practices	30	4.77	6

Source: Field work Scale: 6=Very important, 5=Important, 4=Somewhat important, 3=Little importance, 2=Not important, 1=Unsure.

10. Extent to which inadequate H&S negatively affects Project Parameters

Synergy: A study conducted among construction project managers (Table 6 & 7 for S.A, Table 8 for Nig.) investigated, inter alia, the extent to which inadequate or the lack of H&S negatively affects other project parameters. It is notable that; H&S culture, Productivity and Cost are the Project Parameters affected by H&S practices in Nigeria, however in South Africa the first three parameters most affected are Productivity, Quality and Cost (Smallwood, 1996) as cited in (cidb 2010, pg 8). This implies that two parameters are common to the two countries which are Productivity and Cost. Similarly, Smallwood and Haupt (2005) gave Productivity and Time to predominate under the study of Extent to which inadequate H&S negatively affects Project parameters.

Table 9 H&S negatively affects Project Parameters (South Africa)

Parameter	Response (%)	Rank
Productivity	87.2	1
Quality	80.8	2
Cost	72.3	3
Client Satisfaction	68.1	4
Environment	66.0	5
Schedule	57.4	6

Source: Smallwood (1996) cited in cidb 2010, pg. 8

Table 10 H&S negatively affects Project Parameters (South Africa)

Parameter	Mean Score	Rank
Productivity	3.85	1
Time	3.83	2
Client Satisfaction	3.76	3
Cost	3.73	4
Quality	3.60	5
Environment	3.37	6

Source: Smallwood & Haupt (2005)

Table 11 H&S negatively affects Project Parameters (Nigeria)

Statistics						
	Extent to which inadequate H and S negatively affects Client satisfaction	Extent to which inadequate H and S negatively affects Quality	Extent to which inadequate H and S negatively affect Cost	Extent to which inadequate H and S negatively affect Productivity	Extent to which inadequate H and S negatively affect Environment	Extent to which inadequate H and S negatively affect H&S Culture
N	30	30	30	30	30	30
Mean	4.37	4.67	4.73	4.80	4.53	5.03
Sum	131	140	142	144	136	151

Source: Field work Scale: 6=Very important, 5=Important, 4=Somewhat important, 3=Little importance, 2=Not important, 1=Unsure.

*The converging result of the three tables above is Productivity.

11. Sources of Awareness of Construction Regulation

The result below shows that through Seminar Notification many Nigerians got to know about the Regulatory Body of Construction H&S. The 2nd that is most informative are; Industry Magazines, News papers and Practice Notes. Whereas the least is upon Promulgation which implies no law made concerning Construction H&S by Government except the amended one inherited from the Colonial Masters (Idoro, 2008). The H&S law Nigeria have is that used in the Manufacturing Industry “Factory Act of 1990”, which is a local version of Factory Act of 1961 of Britain. Also Idoro (2007) said, The Occupational Safety and Health Act, 1970 is an American Legislation.

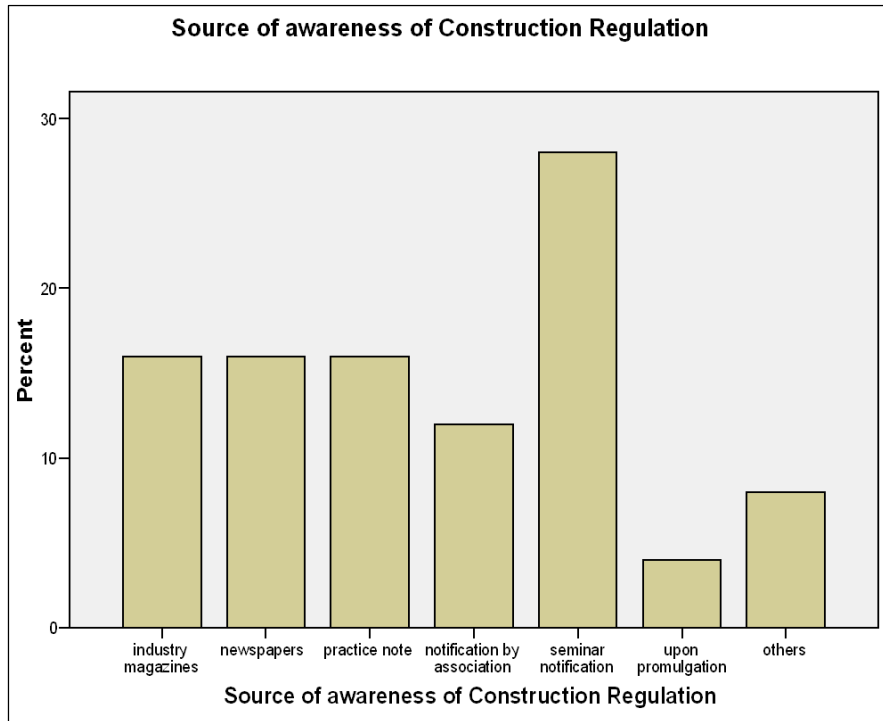


Figure 1 Sources of Awareness of Construction Regulation

12. Degree of Contribution of Stakeholders/Participant on Project H&S

The Construction Regulations place the responsibility for construction H&S on all participants in the construction process – including Clients. In addition to good corporate governance issues, the client therefore has a legal obligation to address H&S in procurement process, which is reflected in (amongst other) the selection and appointment of the project participants and contract documentation.

The below result gave Contractors and Engineers as the highest contributors to Project H&S in South Africa, whereas Project Managers and Contractors are the highest contributors to Project H&S in Nigeria. The two countries converging opinion is Contractors. Smallwood and Haupt (2005) concluded in their research of H&S perception survey in South Africa that, Contractors predominate in terms of the perceived extent to which stakeholders can contribute to H&S.

The Bar Chart below is the result of the Extent to which the Nigerian Construction Stakeholders can contribute to H&S in the Construction Industry.

- Contractors
- Project Managers
- Engineers
- Client
- Architect
- Quantity Surveyors

Table 12 Degree of Contribution of Stakeholders/Participant on Project H&S

South Africa	Nigeria	South Africa		Nigeria	
Organization/Stakeholders		Mean	Rank	Mean	Rank
SAIA	Architect	3.43	5	3.6	4
ASAQS	Q/Surveyors	3.65	4	3.3	5
SAACE (CESA)	Engineers	3.97	2	4.1	3
ACPM	Project Mgrs	3.95	3	4.4	1
Contractors	Contractors	4.33	1	4.3	2

Source: (cidb 2010, pg. 12 for South Africa; field source for Nigeria)

Abbreviation

Cidb: The Construction Industry Development Board (cidb, cidb@cidb.org.za; report).

S/A.: South Africa

Nig: Nigeria

SAIA: South Africa Institute of Architect

QS: Quantity Surveyors

SAACE (CESA): South Africa Association of Civil Engineers

ACPM: Association of Construction Project Managers

Contractors: Contractors

13. Conclusion

The converging and diverging points of observation from this survey carried out are thus concluded below:

Nigerian contractors demonstrated better Management Commitment than South African except in areas like; the head office management not addressing H&S issues and workers are not rewarded for good H&S. This is unlike South Africa where the Department of Labour (DoL) and Compensation Commissioner represent and fight for the right and entitlement of labour in South Africa.

Nigeria Construction Industry has a weaker H&S Supervisory Environment except in the aspect; "H&S inspection are done regularly and at least daily" which is likely to be un-true if an Hypothesis test is conducted in future research.

Nigeria has a less Supportive Environment compared to South Africa.

Nigeria is backward in allowing workers to undergo H&S induction/orientation before they are allowed to start work, poor attitude to proper care and use of PPE.

Nigeria construction workers do not report unsafe and unhealthy working conditions as cited in (Idoro, 2008) which implication is that records of construction accident, injuries, fatalities and Hazards will not be taken and kept.

Contractors and Engineers are the highest contributors to Project H&S in South Africa, whereas Project Managers and Contractors are the highest contributors to Project H&S in Nigeria. The two countries converging opinion is; Contractors as the Major contributor to the practice and performance of Occupational H&S culture in the Construction worksite.

Quality and Cost are a Project factor that has the greatest impact to negatively affect or improve the H&S performance of construction projects in Nigeria which is similar to what we have in South Africa (cidb 2010, pg. 9, bullet 9).

Client Satisfaction, Cost and Quality as a Project indicator for best H&S practices in construction projects in Nigeria which agrees with the South African survey by (cidb 2010, pg. 9, bullet 9).

Seminar Notifications is almost the only source for Nigerians Construction workers to know about the Regulatory Body of Construction H&S. Whereas, the least is upon Promulgation which implies no law made concerning H&S by Government except the amended one we inherited from our Colonial Masters (Idoro, 2004 cited in Idoro, 2008).

Recommendations

An understanding of construction H&S is hampered by a lack of available statistics and lack of OH&S Inspectorate's to monitor, regulate and sanction non-compliance to Safety Regulations in both countries (Nigeria and South Africa).

In addition to compliance with the Construction Regulations, Client can enhance H&S Performance of Contractors, amongst others, through the following points:

- enhancing the impact of the Construction Regulations through Government and Construction Participant involvement in H&S Policies and Supervision;
- Creating separate Construction Regulatory and Supervisory body to monitor and report unsafe H&S attitude, treatment and unfair compensation of construction workers;
- To enhancing the quality and cost of projects, pre-contract plan must be such that constitute bills of quantities to include itemised provisions for H&S of workers;
- Client involvement is imperative in selecting Contractors based on Construction H&S practices and procedures;
- Selecting Contractors based on Construction H&S Practices and Procedures; and
- Specifying requirement for Project-Specific H&S Management Plans and Risk Analysis.
- H&S training is a necessity to all.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest.

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