



INVESTIGATING HEALTH AND SAFETY PLAN USES IN BUILDING PROJECTS WITHIN THE FEDERAL CAPITAL TERRITORY, ABUJA-NIGERIA

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ABSTRACT

The consequence of Safety negation or failure on construction sites is more alarming and pronounced than in any other industry worldwide. The Health and Safety (H&S) management Plan and Act are some of the mechanisms of action to reduce hazards or accidents, thereby ensuring safety and wellbeing of site workers and others coming around. To evaluate the use of H&S Plan by various contractors of building projects in the FCT Abuja, this study adopted the quantitative research approach. 105 questionnaires were served to higher personnel handling building projects in the FCT, plus the personal observation of the sites using checklist to assess level of compliance to H&S plan in practice. The study discovered a good deal of indication to ample awareness of the HASP (with 30.59% responding firms having over 20 years of incorporation experience, while only some 11.75% were of less than 5 yrs incorporation). There was however a seeming disregard to HASP since only a 27.06% compliance was recorded from sampled sites indicative of low Performance of H&S Plan in practice. The Study thereby concluded that the predominant sites visited had little regard to H&S Plan Document and the appreciable awareness noticed would be a vain waste with such a disregard (or very low compliance) tolerated. It was therefore recommended that, laws made should be seen to be obeyed and proactively too from the procurement stage. Hence creating job opportunities for citizens to enforce the law.

KEY WORDS: Health and Safety Plan, Building Projects, Construction Industry, Federal Capital Territory

INTRODUCTION

The construction industry occupies a strategic position of importance for the role it plays in any economy. Unfortunately, there occurs in many developing countries myriad of occupational health and safety issues (Danso, Badu and Kwaku, 2012). According to Thomas (2009), construction workers are six times more likely to be killed at work in construction than anywhere else. Sadly so being that the problem inherent is not that the hazards and risks are unknown, but that they are very difficult to control in a constantly changing work environment.

Earlier definitions of safety in Chatta (2009), by the International Labour Organization (ILO) showed safety as “the degree to which an operation is under control”. The same ILO in association with the World Health Organization (WHO) defined occupational health as the promotion and maintenance of the highest degree of the physical, mental and social well being of workers in all occupations. Fundamentally, effectiveness levels of Health and Safety (H&S) management plan differs from one Construction Company to another; and from country to country based on the available legislations/regulations. However

with the inception of the National Building Code (NBC) in year 2006, coupled with the review of several states' development guides for urban development, there arose need for appraising in different studies, the construction sites' compliance to the regulations entrenched to manage the risks and hazards inherent to the tasks of these sites.

Abuja in Nigeria is a beehive of construction activities with construction and allied professionals in full engagement (Nigerian Institute Of Building, NIOB, 2006) giving valid grounds to test the statement in Fryer et al, 2004 as cited in Chatta (2009) that health hazards on construction site should be the concern of both employers and employees.

According to Health & Safety Executive- HSE (2014) of the UK, an employer must appoint someone competent to help meet the health and safety duties and requirements. A competent person is someone with the necessary skills, knowledge and experience to manage health and safety. In a low-risk business, health and safety is something that can be managed without need to engage any expert (HSE, 2014).

The Construction business is by every yardstick not a low risk undertaking. Nigeria is saddled with a continuous inflow of construction workers from neighbouring countries without adequate appreciation of Safety, Health and Welfare Regulations of construction sites. However, over the years, H&S legislation is being drafted and, reviewed to accommodate the developments in technology, cultures and operatives' behaviours. Nonetheless, hardly does one find any harmonised legislative regulation within the African sub/broad continent for H&S practice (Builders Document. 2011).

On a parallel note, the Irish Government faced with a stern legal proceeding from the European Commission over a breach of the Temporary and Mobile Sites Directive EC 92/57 made the move which put in place the Safety, Health & Welfare at work Regulation

2013. This Directive EC 92/57 sets the minimum standard of Construction Safety/Health Legislation that must apply across the European Union, as well as the uniform practices and qualification of construction workers. Each member state was at liberty to go beyond the minimum standard, without obviously any room to fall below it'. Notably, the review addressed the need for statutory Appointment of a competent Project Supervisor Design Process (PSDP) and Project Supervisor Construction Stage (PSCS) to cater for the provision of preliminary health and safety plan of various categories of works and, engagement of operatives within the EU member countries. Evidently, the issue of Health and safety resulting from accident dates back to the industrial revolution of the 18th century in Great Britain, when machines were invented and factories built (Makinde, 2014).

LITERATURE REVIEW

In a study, Dodo (2013), already asserted that in Nigeria, health and safety have not been given the required attention to reduce or prevent hazards and accidents on construction sites, thereby posing serious threats to workers and even non-workers creating the premise for a quick resolution.

Alarcon, Diego, Sven and Eugenio, (2016), reported that over the years, many prevention management practices have been implemented to forestall and mitigate accidents at the construction sites. However, there was seen only but little evidence of the effectiveness of individual or combined practices used by companies to manage occupational health and safety issues. Whereas the Multinational companies were/may not be suspect of noncompliance, the indigenous firms handling public construction projects require to be probed for real evidence of site safety management efforts. Furthermore, the building industry as a major sub-sector or bedrock of the Nigerian economy provide the basic infrastructure needed to accommodate inputs of all other sub-sectors. Government expenditure in the building industry constitute

over 50% and remains the major buyer of its output, thus making building industry stakeholders continually curious in health and safety matters of their industry (Nessiana, 2010).

In relation to such circumstance, it was pointed by Anderson (2007); Diugwu, Baba and Egila, (2012); and, Idubor and Osiamoje (2013) that regulations without proper enforcement are equal to no laws at all. Lack of strict enforcement of the regulation enables non-compliance and in return non-compliance became a major contributor to the poor state of *He&S* practice in Nigeria. Conversely, it would be evidently noted the benefits of proper enforcement and compliance to health and safety management plan, together with appropriate use of *PPE* by operatives in *USA*, *UK*, and many other developed countries (Nnedinma, David, Keith and Boniface, 2014).

The studies of Dodo (2013) which covered three cities in the North and the other by Makinde (2014) which concentrated on Minna in the North Central Nigeria, provided the needed gap to conduct this study in Abuja. The Federal Capital Territory (*FCT*), Abuja was viewed as the center hub of construction activities (Kolo, 2015) with the glaring involvement of construction professionals and the legislative apparatus.

George, Geoffrey and Matthew (2013) viewed health and safety as the asset that provides real benefits, and that healthy and safe work environment help to keep skilled employees on the job and provide a track to reduce accidents that lead to injuries and schedule delays. Operatives, also called Craftsmen in the construction site, play very vital roles in the survival and development of the construction industry (Ade; Musibau; Habila, and Anthony, 2015), for their engagement in the practical success of all construction projects. However, they are prone to the risks and hazards inherent on the construction site to which Samuel (2014), opined that a form of safety management system should exist to curtail the risks and

hazards and to sanitize the poorly organized system that was characterized by ineffectiveness and poor documentation in disregard of the international standards. Muiruri and Mulinge (2014) analyzed further that Safety, health and the environment are often discussed in site and management meetings as a priority, while in the reality of budget and time discussions, safety and health take a low priority. It was also found that health, safety and the environment are often neglected or rarely provided for on construction sites. This is further compounded by the fact that many accidents and ill-health problems remain unreported thereby raising a concern among stake holders. The Nigerian construction industry is one of the largest markets of construction project in Africa with over 140 million population, 969,000sqkm land mass and 5.6% gross domestic product growth in 2006. The construction industry is responsible for an average of 5.7% improvement of the *GDP* growth and over 42% of the fixed capital formation over the last 4 decades (Olatunji and Bashorun, 2006).

An adequate design and implementation of builders' production document under the context of the *He&S* management plan is required as one of the production information, and one of the eight (8) key performance documents of the project manager (or builder) in the 21st century, as outlined in the Mandatory Course for Professional Development, *MCPD*, of the *NIOB* (2017).

Makinde (2014) studied the attitude of building construction industries within Minna metropolis on the awareness of safety techniques, enforcement of safety measures with respect to frequency of accident and workers' output. It was then opined that provision of adequate safety measures for workers on site improve operatives' performance and the building industry productivity. In addition, the provision of first aid at construction site to assist or reduce the delay in treatment of minor injuries was considered less important and categorized as incentive issue of little concern

to site operatives (Edom A., Osadebe C. C., Ibe K. E. and Omoniyi S. S, 2015). Not so the *HASP* being it proactive and preventive, not incentive issue, and being its provision and use a necessary requirement within the construction site. Boakye, Akomah and Cole(2011), observed that currently the common procedure for awarding construction contracts in developing countries is the open competitive tender, with tenders mainly evaluated on the basis of price. Therefore, the winning tender could be the one with no provision for safety, welfare facilities and safe working environment.

The principal means of control of hazard on site is the Health and Safety Plan (*HASP*). It is a site-specific document designed to enlighten, educate and establish safety guidelines in accordance with the schedule of works to be undertaken by operatives on site and the required conduct by every stakeholder and visitor alike, whose presence on site is expected (Builders document3 2007). The basic content or rudiments of a formal Health & Safety document in Nigeria comprise the followings;

- I. HEALTH and Safety Policy
- II. The Objectives of the Plan
- III. Assessment of Hazards & Risks
- IV. Duties of Firms
- V. Duties of Site Personnel
- VI. Health & Safety Briefing
- VII. H & S Committee
- VIII. Site Accommodation and Welfare Facilities
- IX. Accident Prevention Measures
- X. Protective Clothing and Equipment
- XI. Permit to Work
- XII. Access and Egress from Work Place
- XIII. Underground Obstructions and Buried Services
- XIV. First Aid
- XV. Erection and Inspection of Scaffolding
- XVI. Fire Prevention and Protection Procedure
- XVII. Emergency Procedure
- XVIII. Health and Safety Records.

South Africa in contrast prepare this plan with the following contents ; 1) Contractor Health & Safety Policy Statement 2) Schedule of Appointed Responsible Persons 3) Management & Supervision Organisational Chart 4) Construction Risk Assessment 5) Fall Protection Plan 6) Hazardous Work/Activities –Method Statements 7) Personal Protective Equipment Requirements 8) Measures to Control the Condition and Use of Tools and Equipment 9) Fire Prevention and Control Measures 10) Use and Control of Hazardous Chemical Substances 11) Environmental Protection Measures 12) First Aid Arrangements 13) Construction Site Signage.

Safety officers are saddled with the responsibility to instill a sustainable awareness through regular contacts with the workforce. Safety officers undertake such regular contacts to ensure compliance to ideal standards of machine functions and worker procedures (Mahajan, 2012) for accidents freedom. At unfortunate times, it is upon the safety officers to investigate and make analysis of accidents (Mahajan, 2012) leading to favorable solutions or alternative approaches. Generally, site professionals who work directly and closely with the operatives are held responsible for construction site safety (Eddie, Cheng, Fang and Xie, 2004). Robert, Clifford, and Aviad (2006) mentioned that in planning any construction operation it is necessary to give considerable attention to safety and, that construction experts and workers have both moral and legal responsibilities in making sure that workplaces, work processes and the general environment are safe. Hence, the concept of safety, human protection and the protection of nature have become the important norms, the imperatives and the indispensable instruments of industrial production and therefore of development in any given positive society. It is no secret that building production sites without no provisions or with inadequate provisions to administer health and safety are danger zones (Xianguo; Qian; Limuo; Yanhong, and Mirawslaw 2015), and dungeon like to its partakers.

Numerous factors and conditions of varying strengths militate on the paths of Health and Safety at building sites (Builders/CORBON Document 2011; Thomas 2009; Tijjani 2009 and Makinde 2014). Some similarities or variances occur when different sites are compared, but constraints are altogether a common phenomenon. Health and safety of building sites will be seen to get constrained by a poor attitude to any or all of, but not limited to, the followings:

- i. Site selection of certain projects.
- ii. Design of a project.
- iii. Contract terms and conditions relating to health and safety.
- iv. Production management.
- v. Layout of a site.
- vi. Selection of work teams.
- vii. Materials of work.
- viii. Scheduling of work.

There are as well prospects and benefits (Allan 2005; Chatta 2009 and Mohammed 2003 as in Muiruri and Mulinge, 2014) derivable with standard practices: It must be noted that an outstanding or serious neglect in any of the above tips could degenerate to very unhealthy situations on the project site concerned. On the other hand, prospects to count upon include:

- i. Better selection procedure of contractors.
- ii. Improved professionalism through capacity development and disciplinary measures in the building industry.
- iii. Significant (but not yet requisite) attention and enforcement of procedures and practices on building sites.
- iv. Improved awareness in the field of health and safety boosted by an increased spread of health facilities nationwide where site accidents could be managed.
- v. Improved record keeping of health and safety matters.
- vi. A growing effort by the Nigerian Standard Organization in testing and certification of domestic/foreign building materials.

Beyond the spectrum of hope lies the following benefits (Allan, 2005) on the way of Health and safety in good and viable practice:

- i. Worker morale will be strengthened by being carried along in safety efforts of the firm.
- ii. Public corporate image of company will be socially and financially much improved.
- iii. Hazard combats will be easier and achievable whereas agony of accidents will be defeated.
- iv. Legal tussles over injured workers will get streamlined to make the firm stands up to its obligations
- v. Healthier financial base and financial flow (Banga and Sharma, 2008) owing to appreciable savings from:
 - (a) Compensations to injured workers.
 - (b) Delays and disruptions following injuries.
 - (c) Damages following accidents.
- vi. Standard and stable edifices to make Nation builders proud.

According to Thomas (2009), young people are at greater risk in the Construction industry for having less industry experience and less knowledge of most labour rights. More risky jobs are often given to this category of workers to undertake as the senior colleagues take on higher-level managerial roles.

The *NIOB/AGM* (2001) and Allan (2005) summarized that Construction site accidents may result in any of the following conditions:

- I. Minor injury, whereby the effect is not of long term feature;
- II. Major injury, with a lasting mark of damage on at least one person;
- III. Fatal injury, in which death is involved;
- IV. No injury, with no physical casualty, or
- V. Sundry, where a combination of two or more of the above conditions occur.

From Allan (2005); Mahajan (2012) and *NIOB/CORBON* Documents (2011) can be seen the following group Classification of construction health hazards:

- i. Physical hazards.
- ii. Mechanical hazards.

- iii. Chemical hazards.
- iv. Environmental/Atmospheric hazards.
- v. Animal/Biological hazards.
- vi. Human factors.

METHODOLOGY

The study employed field survey through the use of observational checklists and questionnaire in a mixed method or triangulation approach. Triangulation was to afford a direct access into the contemporary practices on construction sites using health and safety plan or other equivalent means.

The potential population frame of the study covers all the available formal building construction sites within *FCT* Abuja comprising small, medium and large scale construction firms. In similar related researches by Barde (2016) and Ahmed (2016), the population frame of 814 construction firms in Abuja and environs was used based on Federal Inland Revenue Service (*FIRS*)'s list of tax payers in the construction category, where the researchers used 57 and 125 as sample sizes respectively according to the needs and approach of their study types.. Therefore, by a simple analogy and interpolation 814 construction firms were also adopted to be the population frame for this study. The sample size was hence known using the idea developed by Bartlett, Kotrlik and Higgins 2001 as in James (2017) and online too that a good sample size for research is usually 10% as long as it does not exceed 1000. Hence 81 was determined. A further idea by Salkind 1999 as in James (2017) suggested an addition of 10%-50% of the determined sample size over the initial value determined. Therefore, $81 + 8 = 89$

Hence, **90** adopted as sample size for the study. The sampling technique was the Random sampling enabled by views afforded in the first few initial sites to establish further contacts with other active sites. More views had also been sourced from Ministries/Departments/Agencies with active sites of ongoing construction contracts within *FCT*.

The triangulation approach utilized personal observations, checklist and questionnaire to generate complementary data, which normally overcome the inadequacy in any one singular instrument. These instruments were:

Checklist: The checklist consist of two broad rating divisions for 'Yes' and for 'No'. If any firm was found to have a *HASP* Document it fell under the 'Yes' category for further assessment in a five point Ordinal grading format. Companies without the *HASP* Document belong to 'No' division. Further assessment was also conducted in similar scaling pattern with 1=Poor 2=Fair 3=Good 4= Very Good 5=Excellent as defined on the Checklist Report Sheet. This instrument was used to test compliance at visual inspection assessment intervals.

Questionnaire: Questionnaire was prepared in simple, logical form and plain language. Five options were given in each set of questions. An introductory note opened the questionnaire with Section /A/ asking about Company Profile in Ordinal and Range scales, while section /B/ requested for Respondent Profile in Nominal and Range scales. Section /C / dwelled on the Awareness of firms to the basic contents of *HASP* Document in Ratio scale (eg very high, high,.....,very low), all for Respondents to show how much of these contents they cared to know. Section /D/ itemized some known Causes of Construction Site Accidents; Effects and Preventive measures in Ratio scale to check if Accident was really a concern to these firms. The raw data from the field (primary data) generated by the use of above named instruments formed the data used in this study. Previously recorded/documentated data formed no part of this work.

The method of administration of the questionnaire was the direct contact sessions whereas the checklist was at visual inspection times. The Sample Size of 90 calculated earlier informed the distribution of 90 sets of questionnaires to professionals handling various sites within the *FCT* Abuja. Getting to retrieve the same 90 proved too laborious

largely because of the skeptical fears in the respondents arisen from the research title itself, coupled with the Contractors' attitudes to Site Safety and perhaps the way the research findings might turn to affect their business. This made it necessary to add 15 more sets to be able to assiduously recover the minimum 90 as stipulated by sample size calculation. Eventually, only 85 were found worthy/valid for use in the work.

Observation into available *HASP* document/alternative and how much of it applied to site processes was undertaken primarily to note facts as they occurred.

The data generated was thereafter assembled in format-arrangements (Tables) for analysis using the SPSS---The Statistical Package for Social Science studies.

The presentation of results in Tables showing frequencies, percentages, mean and rankings were used to express and present results for appropriate discussion. Inferences were also made for clarity and ease of following or comparison where necessary.

DATA PRESENTATION, ANALYSIS AND DISCUSSION OF RESULTS

Results generated are products of the field information which were targeted at finding clues to the objectives of the Study.

Types of Construction Company or firm

From Table1 it is seen that 27(31.77 %) of the 85 firms contacted were of Small Scale cadre, 28 (32.94%) of them were Medium Scale, while 30(35.29%) were Large Scale construction firms. There seemed to be a uniform spread in the number of participating firms. No monopoly or fangs of domination by any grouping over the others has been indicated.

Length of incorporation of firm

From the Range Scale options of 1= Less than five years; 2= 5-10 yrs; 3= 11-15 yrs; 4=16-20yrs; 5= Greater than 20yrs. The following assessments were made.

Table 1: Types of company or firm

Types of Company/Firm	Frequency	Percentage
Small	27	31.77
Medium	28	32.94
Large	30	35.29
Total	85	100.0

Source: Field Survey (2018)

Table 2: Length of incorporation of firm

Length of Incorporation of Company	Frequency	Percentage
Less than 5years	10	11.75
5-10years	14	16.47
11-15years	16	18.84
16-20years	19	22.35
Greater than 20years	26	30.59
Total	85	100.0

Source: Field Survey (2018)

Table 3: Length of Experience of Respondents

Years of Experience	Frequency	Percentage
Less than 5years	4	4.71
5-10years	12	14.15
11-15years	23	27.06
16-20years	25	29.41
Greater than 20years	21	24.67
Total	85	100.0

Source: Field Survey (2018)

Table 3 summarizes the length of experience of respondents in their professional callings with 25(or29.41%) being the highest, comprising people within the 16-20years bracket of construction practice. Only 4 persons (or 4.71%) were very fresh with less than 5 years in practice. The study was very fortunate to have witnessed very experienced respondents

Annual turnover of company or firm

Data was collated on the annual turnover of the responding companies and the result was as presented in Table 4.

Table 4: Annual Turnover

Annual Turnover (3 yrs)	Frequency	Percentage
Less than 50m	13	15.29
50-100m	14	16.47
100-150m	17	20.0
150-200m	18	21.18
Greater than 200m	23	27.06
Total	85	100.0

Source: Field Survey (2018)

From Table 4, it can be seen that the highest number or 23 firms (27.06%) made the highest incomes (Greater than N200m) within the last three years; whereas 13 firms (15.29%) were in the lowest range of Less than N50m. There was also a near smooth pattern in the frequency distribution from the lowest to the highest indicative/suggestive of better strategies including perhaps H&S and finance by the responding firms.

Awareness of basic contents of H&S management plan

The Questionnaire listed 12 items being basic

contents required of Health And Safety Plan Document with each provided 5 options for respondents to indicate a level of awareness to each item.

Table 5 shows that Environmental Protection measures formed the 1st cardinal opinion of respondents followed in priority by Duties of Site Personnel. Policy statement appeared the least (12th) as if to say that the sites operate on notional precepts of H&S Plan, only in mind. Policy Statement should have provided the guiding principle to shape and direct all operations. It is thus not difficult to see that the H&S Plan was not but of little use to most of these respondents.

Level of Compliance to H&S Plan on construction Sites

The level of compliance to health and safety plan and its quality were tested on construction sites using checklist and the results here presented in Table for firms with, and others without H&S Plan.

A total of twenty three (23) construction firms (or 27.06% of sample size of the study) showed H&S Plans of different qualities which when assessed on the grading scale were found to fall between Fair, Good, Very Good or Excellent. 2=Fair means there was some correlation between plan and the site

Table 5 Level of Awareness of H&S Plan

Variables	N		Mean	Std. Deviation	Maximum	Rank
	Valid	Missing				
Environmental Protection Measure	85	0	3.50	1.368	5	1 st
Duties of Site Personnel	85	0	3.48	1.173	5	2 nd
Assessment of Hazards and Risk	85	0	3.47	1.342	5	3 rd
First Aid Arrangement	85	0	3.46	1.415	5	4 th
Emergency Response Plan	85	0	3.30	1.457	5	5 th
Protective clothing and equipment	85	0	3.29	1.440	5	6 th
Management & Supervision organizational Chart	85	0	3.28	1.307	5	7 th
Fall Protection Plan	85	0	3.18	1.370	5	8 th
Construction site signage	85	0	3.17	1.335	5	9 th
Health & Safety records	85	0	3.17	1.360	5	10 th
Health & Safety Committee And Meetings	85	0	3.04	1.332	5	11 th
Health & Safety Policy Statement	85	0	2.92	1.478	5	12 th

Source: Field Survey (2018)

Table 6 Building Sites with and without H&S Plans

Sn	Compliance level	Frequencies		Percentages	
		Sites with <i>HASP</i> / Sites without		Site with <i>HASP</i> / Sites without	
1	Poor	0	57	0.00	91.9%
2	Fair	4	3	17.39	4.84%
3	Good	8	2	34.78	3.26%
4	Very good	5	0	21.74	0%
5	Excellent	6	0	26.09	0%
Total		23	62	100.0	100.0

Source: Field Survey (2018)

activities, 3=Good stands for a clear indication of link between plan and site works, 4=Very Good where a safety officer placed up to 50% of the plan on the ground; 5=Excellent where a total compliance with the plan was noticed. In other words none had 1=Poor score meaning no correlation at all between plan and site activities. The six (6) with excellent were from the large scale estate developers, foreign firms and a government agency on property development. Therefore, 27.06% or less than 30% compliance was discovered.

Some Sixty two (62) (or 72.94%) other companies were without H&S Plan of which three (3) were able to present certain safety pictures and safety wears/apparatus which they use for orientation/instructions to workmen. Some other two (2) had more pictures and a first aid box each. Whereas 57 firms had neither *H&S* Plan nor alternative. None was found to score Very Good or to fit for the Excellent grade according to the key in the grading scale used. i.e: 1-Poor which means no alternative to H&S Plan.. 2=Fair means non relevant alternative. 3-Good stands for relevant alternative. 4=Very Good stands for a clear indication of links between the alternative document and site works. 5=Excellent for reasonable compliance (50%-70%) to alternative document and site works. Therefore, about 73% of the sites visited were not H&S Plan compliant.

Causes of Accidents – Human and Non Human Factors

Seventeen (17) prevailing site conditions and practices (*NIOB*, 2001; Robert 2006; Banga and Sharma 2008; Chatta 2009; Thomas 2009; Tijjani 2009; and Mahajan 2012) have been itemized in the Questionnaire to check if accident was really a concern to construction firms. The idea here was to measure *H&S* Plan performance if all sites were compliant. The following table gives the result of the processed data:

From Table 7 it is seen that respondents accord the heaviest weight of opinion to 'Use of defective Tools/Equipment'(M=2.76) as being the principal cause of site accidents. Following closely to this in hierarchy was the respondent belief in the Unsafe speed of Operating Tools/Equipment'(M=2.7) for bonus aims. This could be a judgment of personal experiences, particularly on our roads. The respondents also seemed to turn blind eyes to drugs/alcohol abuses(M=2.17) on their sites (17th) which must not happen if *H&S* Plan was adhered to.

Effects of Accidents on sites

The Questionnaire provided 8 nos. of possible effects (*NIOB* 2001; Banga and Sharma 2008; Robert 2006; Chatta 2009; Thomas 2009; Tijjani 2009; and Mahajan, 2012) of construction site Accidents. Here too the aim was to measure *H&S* Plan performance if all respondents were compliant. The following result in Table 8 was generated.

Table 7 Analysis of Accident causes on site

Accident causes	N		Mean	Std. Deviation	Maximum	Rar
	Valid	Missing				
Use of defective tools/equipment	85	0	2.76	1.401	5	
Unsafe speed of operating tools/equipment for bonus aims	85	0	2.70	1.386	5	
Excessive speed to complete work against ethics	85	0	2.68	1.356	5	
Lack of skills for equipment handling	85	0	2.67	1.476	5	
Faulty design and lack of buildability	85	0	2.63	1.441	5	
Non enforcement of building regulation	85	0	2.63	1.480	5	
Lack of adequate maintenance of equipment	85	0	2.62	1.387	5	
Defective temporary/false works and scaffolds	85	0	2.59	1.437	5	
Failure to use personal protective device	85	0	2.59	1.453	5	
Collapse of part or the whole building structure	85	0	2.57	1.514	5	
Lack of team spirit (Working attitude/new workers)	85	0	2.56	1.566	5	
Use of defective materials against specifications	85	0	2.52	1.416	5	
Construction methods (fitting or works to height)	85	0	2.49	1.343	5	
Carelessness/ Lack of interest and concentration	85	0	2.47	1.351	5	
Failure of tools/equipment (Crane hoist etc)	85	0	2.40	1.498	5	
Deliberate risk taking against procedure & compliance	85	0	2.39	1.313	5	
Indulgence in drugs and alcohols	85	0	2.17	1.416	5	

Source: Field Survey (2018)

Table 8: Analysis of Effects of Accidents on sites

Variables	Statistics		Mean	Std. Deviation	Maximum	Ranks
	Valid	Missing				
Loss on investment or early return on investment	85	0	2.73	1.549	5	1 st
Damage or destruction of material/equipment	85	0	2.69	1.443	5	2 nd
Loss to employer resulting from compensation	85	0	2.63	1.547	5	3 rd
Injuries or death to operatives on site	85	0	2.61	1.556	5	4 th
Damage to adjoining property	85	0	2.60	1.356	5	5 th
Injuries or death to 3rd party (those visitors to site)	85	0	2.58	1.565	5	6 th
Loss of wages/salary to the employees	85	0	2.52	1.455	5	7 th
Damage to the work in progress	85	0	2.36	1.479	5	8 th

Source: Field Survey (2018)

From Table 8 respondents have indicated that the worst effect of accidents on sites was the Loss of return on investment or early return on investment. Next was the Damage to material/equipment. While Injuries/Death of operative only came 6th, likely owing to no repercussions. The Damage to the work in progress (8th) appears to be a matter for the Client as the respondents indicated the least of

concern to it. It was almost a non issue. This only goes to show how selfish and less committed the sites were to the jobs entrusted to them as well as to the human feelings of the operatives/visitors on their sites. Enforcement of the *He&S* Plan would have corrected all such misplacements.

Table 9 Analysis of Accident Preventive measures

Variables	N		Statistics		Std. Deviation	Maximum	Ranks
	Valid	Missing	Mean	1V.			
Effective and efficient supervision on site	85	0	3.79		1.259	5	1 st
Teamwork spirit and specialization	85	0	3.72		1.263	5	2 nd
Ensuring a good working environment	85	0	3.62		1.354	5	3 rd
Use and compliance to personal protective device	85	0	3.57		1.454	5	4 th
Improving upon workers welfare	85	0	3.38		1.312	5	5 th
Training the employees	85	0	3.19		1.421	5	6 th
Activities of trade union on site	85	0	3.07		1.405	5	7 th

Source: Field Survey (2018)

Preventive measures of Accidents

Here too, 7 factors that prevent accident on Construction sites (NIOB 2001; Robert 2006; Banga and Sharma 2008; Chatta 2009; Thomas 2009; Tijjani 2009; and Mahajan 2012) were itemized in the questionnaire to give rise to the following. The Performance of *He&S* Plan was still the target.

From Table 9, most respondents believed in the philosophy of Effective and Efficient supervision to be in the topmost of Accident Preventive measures worthy of consideration on site. Then came by consensus, the Teamwork spirit and specialization. However, they indicated that Activities of Trade Union on site was virtually nothing to reckon with in Accident prevention efforts. This was nonetheless a fair judgment but could still be better if an Enforcement Body was appointed to keep watch.

Summary of Findings

- i. This Study witnessed a nearly balanced spread in frequency of participating firms with the Large Scale companies having a little edge advantage over Small Scale and the Medium Scale firms. However, linking Tables 1 & 2 together we discover that age of company may have some influence on its growth.
- ii. Table 3 informed us that the survey was conducted over largely experienced respondents (16-20yrs), while Table 4 indicated more firms making gradual upto the highest Turnovers, perhaps due to

better financial as well as *He&S* Strategies.

- v. Table 5 tended to indicate a disregard for *He&S* Plan as it showed Environmental Protection measures ranked first (Mean of 3.50) in the awareness determining parameters. While, Policy statement appeared with the least Mean (2.92) and Ranked (12th) because *He&S* Plan was of little use to these respondents.
- vi. Table 6 showed Twenty three (23) firms or 27.06% Compliance to *He&S* Plan provision and usage. However, Sixty two (62) other companies or 72.94% without *He&S* Plan from which 91.9% had no even any alternative indicating gross non compliance.
- vii. Table 7 was a pointer to the dangers of Use of Defective Tools/Equipment (Mean=2.76) followed by Unsafe Speed of operating Tools/Equipment as the quickest factors causing site accidents. At the same time pretending that alcohols/drugs were of no harm. This may be so because no site was held accountable for drug mis-use.
- viii. Table 8 clearly showed how selfish these responding sites could be for having chosen Loss of Return on Investment (Mean=2.73) as highest and, the accompanying Damage to material/Equipment (M=2.69) to be the most preoccupying effects of site accidents. Injuries/Death(6th) and Damage to Work in Progress (least mean of 2.36) were not much of concern. Therefore, Tables 7 and 8 together showed the poor performance of *He&S*

Plan in a situation where there was no Compliance and no Enforcement to check it.

In Table 9 respondents displayed a sense of aptness in the handling of Accidents prevent measures, placing Effective and Efficient supervision (Mean=3.79) as the most suitable. However, with a strict chase of envisaged Enforcement personnel, the Training of Employees would receive a better attention than what the table showed.

CONCLUSION

The Study hereby concludes that with Policy Statement relegated to the bottom it showed therefore a disregard that exist for *H&S* Plan, despite the lengthy experience of respondents and the participating firms. Also, only a few responding firms (27.06%) were found to have or complied to the *H&S* Plan document on site. Most others (the indigenous contractors) 72.94%, from which 91.9% did not even have any substitute to it as a Safety guide. The Performance of H&S Plan was shown by Tables 5, 6, 7, and 8 to be Poor without adequate Compliance. Hence requiring strict Enforcement to reverse the situation.

RECOMMENDATIONS

- I. Laws made should be seen to be obeyed. The site professionals require policing and penalties to comply fully to *H&S* Plan despite the indicated satisfactory length of practice experience. Enforcement when applied will create job opportunities for citizens. This Enforcement should be proactive from the procurement stage.
- II. Further research could open more grounds since construction practitioners are well safety enlightened via efforts of the professional bodies. Why it is only idealistic at some sites--Governmental project sites, remains to be researched.

A dialogue forum comprising all construction stakeholders requires to be formed to evolve a

pragmatic line of action and put forward to the Federal Legislative authority. In the same token, Health and Safety as a Study Course need be introduced in the Polytechnics and Universities of Technology to compliment genuine efforts of the professional bodies. Noteworthy at this juncture was the Federal Government idea of establishing a Construction Development Initiative to workout modalities for the enactment of a Health and Safety bill for the Construction Industry in Nigeria and a standard Construction Development Board.

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