

Framework for Successful Implementation of Health and Safety Practice on Construction Site in Abuja

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Abstract:

The need to provide safety work environment for construction workers calls for effective implementation of health and safety management practice (HSMP) on construction sites. Effective implementation of HSMP creates safe work place, thus reduce accident rate and enhance workers productively. This research work is aimed at providing a safe work place for construction workers on site. This was achieved through the use of structured questionnaire on selected project sites in Abuja, Nigeria and development of frame work for effective implementation of health and safety practices on construction site. Data were analyzed and ranked through the use significance importance index (SI) on the ranking scale, absence of provision for the cost of health and safety measures from tender document, lack of commitment to health and safety ay work place by stakeholders of construction project and designers not taken into consideration health and safety problems associated with subsequent maintenance and up keep of building at design stage were first three most significance factors affecting effective implementation of health and safety practice on site, with a significance index , 0.913, 0.862 and 0.821 respectively, while lack of regular safety audit was the least on the ranking scale with SI of 0.526. On the contrary, adequate provision for cost of health and safety measures in tender document, management commitment to health and safety measures (HSM) at work and adequate safety training were ranked as the first three most influential factors that moved effective implementation of health and safety practices on construction sites. The frame work developed was tested for its effectiveness and the respondents strongly agreed that the frame work has the potential for implementation of health and safety practice on construction sites.

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1. Introduction

The construction firm is a large scale multitasking agencies that incorporate floods of human resources and machineries, therefore safety and health management scheme is paramount (Halpin and Senior, 2010). The industry all over the world is considered as one of the hazardous industry. No wonder, the international labour organization (I.L.O) in 2011, reported that out of every six fatal accident at work, one must be on a construction site. It further alluded to the fact that 60,000 and above fatal accidents occur on construction sites around the world every year. This statement confirmed the earlier assertion by Keler and Keller, (2009), that a

construction job or work environment is considered as highly risky and hazardous.

Despite the fact that a construction job or work is highly risky and hazardous, susceptibility to accident is still controllable, depending largely on work situation which is humanly controllable (Olutuase, 2014). This has been prone to be true by safety records in the same construction industry in most advance countries of the world (Koelin etal, 2000). The worries and question been raised by researchers and some construction professionals is that why should worst safety conditions persist on construction sites in Nigeria and other developing nations of the world, seeing that most of these safety

conditions are humanly controllable (Idoro, 2005; Enhassi et al, 2008).

Ironically, the causes of accidents are well known and almost all preventable and other business issues occupational safety and health (OSH) are manageable in construction firms, yet the reality of it is contrary in practice (the International Training Center of the ILO, 2011). Makinde, (2014), asserted that there is a need for special attention to health and safety management in construction firms in Nigeria. The reason is because the construction business in Nigeria is flooded with quacks and illiterate tradesmen and contractors especially in the rural areas where most of the construction contracts fall into the hands of these illiterate “money bags” who took over construction job in Nigeria. In 1985, the Federal Tender Board (FTB) published statistics of such contractors in Lagos State that handle job of five million (#5,000,000:00) and below to be about 70%, while only 30% of the contract within this amount involve professionals. This situation made health and safety management in construction industry in Nigeria which suppose to be vital issues of concern, to attract little or no attention over the years (Makinde, 2014).

Previous studies in health and safety management on construction site have uniformly recommended that construction firms should adopt safety system that seeks to prevent the occurrences of accident rather than essentially managing accident cases and victims by paying medical bills and compensation (Buff, 2003; Lamontagne et al, 2003; Needleman, 2000). The care of the health and safety management system was highlighted by Bluff (2003) and it includes: systematic identification of hazards, assessment and control of risk, evaluation and review of risk ensure that they are effectively implemented and maintained. The author further stressed that for the effectiveness of such health and safety management program, responsibility must be designated to competent safety personnel and other stakeholders involved who will determine and implement the required preventive measures that

those workers will actively be involved; and the procedures are documented and repeatable. This means that an effective health and safety management system requires the implementation of core structures and processes and action by key players (Oluase, 2014).

Previous studies have shown clearly that causes of accident on construction sites have been identified and are well known, strategies for safety management on construction site have been developed, Health and Safety Acts on construction sites have been promulgated in Nigeria (Oluase, 2014; Mankinde, 2014; Jimoh et al, 2017; Idoro, 2018), but the worst condition of health and safety on Nigeria construction sites still persist. The major problem of health and safety on construction sites in Nigeria and other developing countries is the implementation of health and safety policies, measures, programmes and systems to reduce accidents, injuries, sick pay, fatalities, lost work hours, workers agitation and compensation claims. The principal objective of this study is to develop a framework for effective implementation of health and safety management practice on construction site in Nigeria.

2. Methodology

The order to develop a framework that will be effectively implemented on Nigeria construction site, a number of barriers and movers of effective implementation of (HSM) practice on construction site must be well known. These calls for the use of mixed method used in this research, to enable the researcher collect all the necessary data that was used in the development of the framework.

The mixed method incorporate literature review, case study, questionnaire survey, and physical inspectors (observations) of health and safety facilities provided on the selected construction sites in Abuja Nigeria.

Case study:

In order to facilitate data collection process and solve or minimize the problem of non-compliance to

health and safety regulations on construction sites in Nigeria, a number of construction sites were required within the case study area. Selective sampling is employed as one of the key criteria used in the pre-selection of the case study was the inclusion of construction frame that has on-going project(s) on construction site in Abuja Nigeria.

Questionnaire Survey:

In order to identify and rank the barriers and movers of health and safety management practice on construction site in Abuja Nigeria, a structured questionnaire was designed, targeting contractors, clients and the employees. The major objective of the questionnaire is to seek the concept of the clients, contractors and the employees on the level of compliance on provision of health and safety facilities the factors militating against the health and safety of the construction workers and those factors that will enhance or provide a safe working conditions for them as well as seeking for effective way(s) of implementing HSM practice on construction site. The questionnaire was first piloted with three construction site in Abuja, in which case, three (3) contractors, three (3) project managers, three clients and eighteen (18) employees (construction craftsmen) were used as respondents. The result of this pilot study enhances the development of the framework for this study. The

questionnaire for the main study was distributed personally by the researcher on the various selected construction sites in Abuja Nigeria. In all a total of 165 questionnaires were distributed and a total of 143 were dully completed and returned to the researcher which was used for the analysis. Significance index (SI) was used in ranking the factors militating against and enhancing effective implementation of HSM practice on construction site in Abuja Nigeria.

$$\text{Significance index (SI)} = \left(\frac{\sum (fi)}{NI} \right)$$

Where I = importance weighting

F = frequency of occurrence weighting assigned by respondent in the questionnaire

I and f are the highest rating possible for each of the assigned factors.

N = the total number of respondent.

3.0 Results and Discussion

The results from the analysis of data collected for this study presented in tabular form and discussion follows immediately after each table.

Table 1 present the result the result of compliance with the provision of international labour organization ILO (1993) and occupational health and safety (OHS) Act 1989.

Table 1 conditions to comply with.

Key requirement to be met	Level of compliance with the provision				
Contractors	1	2	3	4	5
1. Plants and equipment safety for use		✓			
2. Adequate and timely provision of PPEs		✓			
3. Provision of adequate information on hazard		✓			
4. Safety training provision	✓				
5. Instruction and supervision to help the workers to do work safely			✓		
6. Provision for first aid		✓			
7. Proper display of safety/caution sign	✓				
8. Provision of qualified and experienced HS personnel on site	✓				
9. Availability and adequate of clinical services for employees on site			✓		

10. Clarity of emergency exit					
11. Regular safety audit					
Clients					
1. Controlling of all activities relating to HS on their construction project		✓			
2. Inform all contractors on the project special risk to HS which client should be aware		✓			
3. Ensure that tenderers make provision for the cost of HS measures during process		✓			
Employee					
1. Corporate with the employer and follow all health and safety instructions		✓			
2. Use all necessary PPEs provided			✓		
3. Must not willfully or recklessly interfere with or misuse anything provided in the interest of HS				✓	
4. Must not willfully place at risk the HS of any person at work place					✓
5. Work safely to create a sense of security in doing their work.				✓	

KEY

- 1– (0) – No compliance
- 2 – (1-30) – Little compliance
- 3 – (31-50) – Middle compliance
- 4 – (51-80) – High compliance
- 5 – (81-100) – Very high compliance

Table 2 present bearers to effective implementation of health and safety practice on Nigeria construction sites. The respondents indicated fourteen factors that militate against successful implementation of health and safety practice on Nigeria construction sites. They ranked these factors according to their severity and absence of the provision for health and safety measure on construction came first on the ranking scale. This was followed by lack of stakeholder's commitment to health and safety at work place, and designers not taken in consideration health and safety problem associated with subsequent maintenance and up keep of building at design stage with relative importance index of 0.913, 0.862 and 0.821 respectively. The last factor on the ranking scale was lack of regular site and with relative importance index of 0.526.

The value of the importance index of all the factors indentified was above fifty percent. This implies that each of the factors significantly affect effective implementation of health and safety practice in the entire sampled construction project in Abuja Nigeria.

Table 2 Bearers to effective implementation of Health and Safety Practice on Nigeria Construction site.

Factors	SI	Ranking
1. Absence of provision for the cost of health and safety measures from tender document	0.913	1
2. Lack of commitment to health and safety at work place by stakeholders of construction project	0.862	2
3. Designer not taken into consideration health and safety problem associated with subsequent maintenance and up keep of building at design stage.	0.821	3
4. Absence of government safety inspectors to monitor implementation of HSP on construction sites	0.940	4
5. Lack of management's commitment to HSP at work place	0.710	5
6. Refusal of the employees to use personal preventive	0.690	6
	0.687	7
	0.681	8
	0.653	9
	0.633	10
	0.570	11
	0.552	12
	0.541	13
	0.536	14

equipment (PPE) provided		
7. Non-availability and inadequacy of clinical services for employees		
8. Refusal of employees to adhere to HS laws and instruction		
9. Lack of orientation for new workers		
10. Inadequate and total absence of first aid and medical arrangements		
11. Absence of safety and healthy training		
12. Lack of safety plans		
13. Lack of clarity or total absence of emergency exit		
14. Lack of regular safety audit		

and safety issues		
8. Provision of adequate information of hazard		
9. Regular health and safety audit		
10. Presence of government safety inspectors to monitor the implementation of HSP on site		
11. Taking into account safety problems associated with maintenance and up keep of building		

Table 3 Movers of Effective Implementation of Health and Safety Practice on Construction Site

Factors	RII	Ranking
1. Adequate provision for cost of health and safety measures in tender documents	0.884	1
	0.867	2
2. Management commitment to health and safety measures (HSM) at work place being noticed and physically seen	0.830	3
	0.794	4
	0.776	
	0.743	5
	0.725	6
3. Adequate safety training	0.678	7
4. Integrating health and safety of construction workers into design and planning process	0.614	8
	0.587	9
	0.614	10
5. Availability of clinical services for employees	0.546	11
6. Adequate and timely supply of PPE		
7. Safe system of work plans to mitigate personal health		

Table 3 present factors that enhance effective implementation of health and safety practices on Nigeria construction sites. The respondents identified eleven factors as movers of effective implementation of health and safety practices on construction sites in Abuja Nigeria. The factors were equally ranked based on their importance as movers of effective implementation of HSP on construction sites.

On the ranking scale adequate provision for cost of health and safety measures in tender documents was first. This was forked by management commitment to health and safety measures at work place and adequate safety training. Taking inconsideration safety problems associated with subsequent maintenance and up keep of building was last on the ranking scale. Importantly, all the important index value was more than fifty percent (50%). This also implies that all the factors indicated by the respondents in this study play significance role(s) in effective placement of HSP.

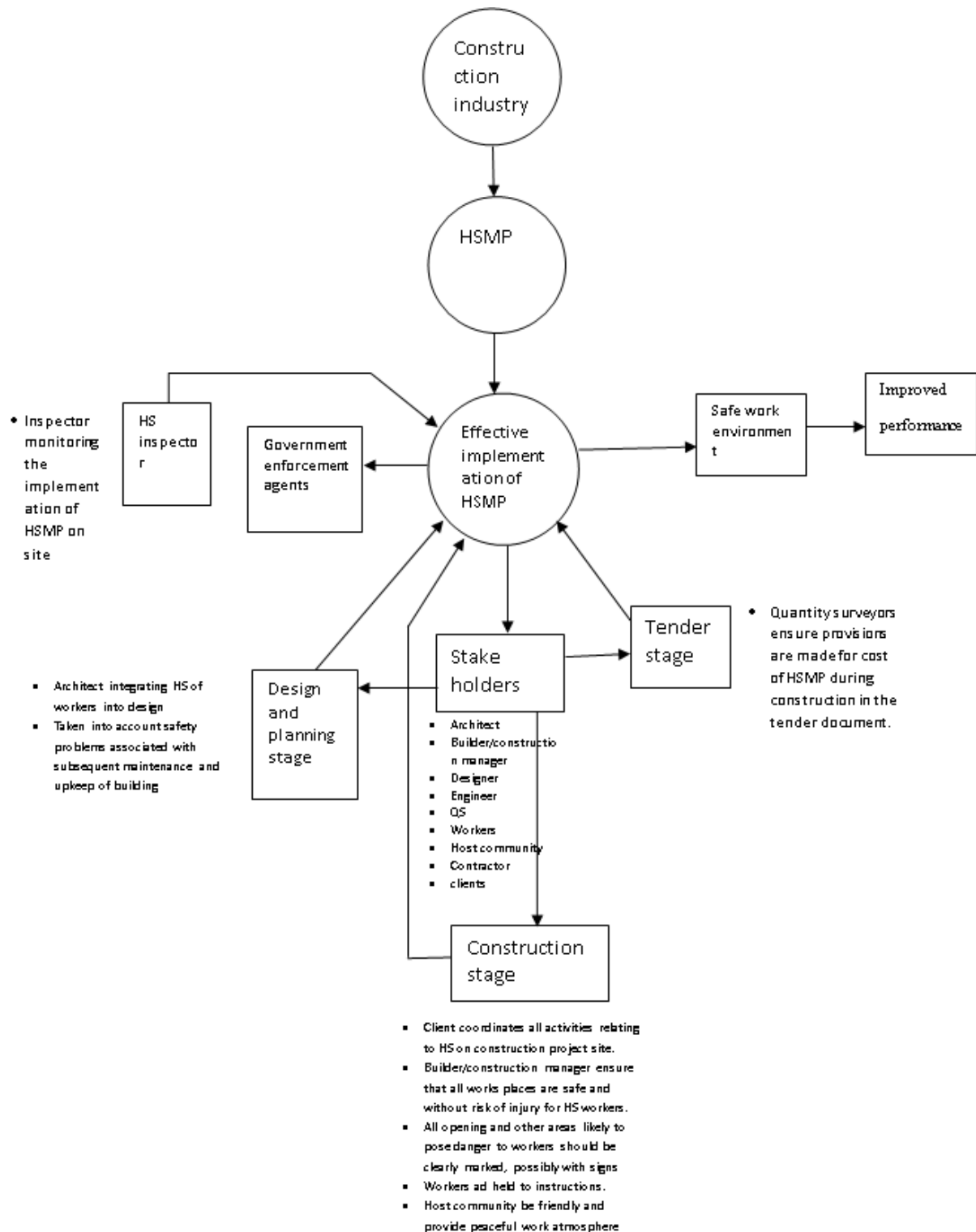


Figure 1 Frame work for effective implementation of health and safety practice on construction site in Abuja Nigeria.

A frame work was developed in figured for effective implementation of HSP on construction sites in Abuja Nigeria. The framework considered variables (Government enforcement agents and stakeholders) and one dependent variable the effective implementation of HSMP. These two categories of variables are sub variable under them. The general relationship in the frame work is that effective implementation of health and safety management practice on construction site depends on the

government enforcement agents and the commitment of the stakeholders of construction projects towards safety at work place. The frame work shows the responsibilities of the sub variables at different stages or phases of construction. Government agents are to check and monitor the implementation of laws/regulations on health and safety measures at all stages of the construction, while individual stakeholders in construction projects are expected to carry out their duties/or requirement by law on health and safety practice at work place.

Effective implementation demands that the government and stakeholders of construction project must fulfill the conditions stated by health and safety act, international labour organization to enhance safe work environment and improved performance which was the goal of this frame work. The frame work for this study was tested through questionnaire survey distributed across the sampled sites in Abuja, Nigeria. The results from this survey indicated a strong agreement from the respondents that strong commitment of the project stakeholders in fulfilling the requirement by laws on health and safety at work place and government involving their agents in monitoring implementation of health and safety practices on construction will result to safe work environment and improved productivity.

CONCLUSION

Effective implementation of health and safety practices on Nigeria construction site required a strong commitment and active participation from the government and stakeholders of construction projects in discharging their individual responsibilities. A typical effective implementation of health and safety practice on construction site in Nigeria should encapsulate the government agents (safety inspectors) on site, Quantity Surveyor including cost of health and safety measures as tender document, Architects and planners integrating health and safety of workers into design, taken into consideration safety problems associated with subsequent maintenance and up keep of building. The contractor/project managers ensuring regular

health and safety training for both new and older workers, all work places are safe and without risk of injury for health and safety workers.

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