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Factors Affecting Effective use of Safety Wears among Site Operatives: Lessons from Indigenous Firms in South Western Nigeria

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Abstract

Work related hazard is not a new phenomenon but its frequent occurrence on sites remain a major setback towards successful projects delivery. The study assessed factors affecting effective use of safety wears on construction sites. Based on snowball and random sampling technique, 128 copies of questionnaire were administered to participants with years of experience on construction management. The outcome of the study revealed that the top aspect of safety practices currently explored by the indigenous construction firms on sites include: provision of temporary fence, provision of accidents prevention procedure and development and frequently review of Safety Policy for building projects. The result of Independent Samples T-test showed the top three factors preventing effective use of safety wears on construction sites are: inadequate engagement of Safety Managers on sites**,** lack of proper training on effective use of safety wears and workers failure to adapt with safety practices as it was against their traditional training. This paper concluded that effective use of audio and visual displaying gadgets on site, conducting in-house safety training for the workers and ensure one Safety Manager is employ on every construction sites will go a long way in improving workers safety practices on sites.

Keywords: Health and Safety Practices, Indigenous Firms, Safety Improvement Measures, Safety Wears, Site Operatives.

INTRODUCTION

Construction industry in any country is associated with vital contributions to national economic development through strategic planning, design, and construction in transforming various production processes into constructed facilities **(**Isa, Jimoh and Achuenu, 2013**)**. The industry is unique among all other sectors because it provides necessary infrastructures that stimulate national development **(**Olanrewaju and Abdul-Rashid 2015**).** Ayangade (2000) stated that the industry is a project-based firm that involves different parties working together towards achieving common goal. In Nigeria, Construction companies operates majorly in two categories: multinational construction companies and indigenous construction companies Idoro (2007) and Ogbu (2011). Indigenous construction companies are known to be Nigerian owned firms, whose establishment and man power resources were relatively sourced for in Nigeria and their strength determine the level of its operation in terms of project capacity and they are mainly seen as medium and small size firms Ogbu (2011), Ibrahim, Daniel and Alkizim (2014) and Ibrahim, Githae and Stephen (2014).

Smallwood and Haupt (2002) opined that the industry compared with other sectors of the economy, has suffered several caliber of casualties during the execution of building projects across the globe and this has made the construction industry most dangerous or highly hazardous industry. Approximately 25% of the Nigeria's workforce were attributed to construction industry (Ibrahim and Musa-Haddary, 2010). Activities of the indigenous construction companies in Nigeria were significant to the attainment of national development with the aim of providing infrastructure facilities and employment opportunity (Osei, 2013; Nyoni and Bonga, 2016). However, indigenous construction companies still represent one of the most dynamic and risky business in Nigeria because safety practices has not been given its right place and means of achieving projects goal were characterised by accidents, injuries and death which pose threat to lives and wellbeing of the workers.

The causes of occupational accidents have been classified into unsafe conditions and unsafe behaviour of operatives, such as their attitude to safety wears and implementation of safety practices on sites. However, this study aimed at evaluating factors preventing site operatives' from using safety wears on construction sites based on the perspectives of indigenous firms in South Western Nigeria. The research objectives include:

(i) To evaluate current state of safety practices on construction sites by the indigenous firms'

(ii) To identify key factors preventing effective use of safety wears by workers on sites.

(iii) To examine safety improvement measures and control systems available for safety practices and compliance on construction sites.

LITERATURE REVIEW

Related Studies on the Current State of Safety Practices by the Indigenous Construction Workers.

Several attempts have been considered by the construction industry towards improving its safety performance. Ogundipe, Ajao, Ogunbayo and Amusan (2015) argued that challenges facing indigenous firm are numerous and the include: increased

cost of borrowed capital, staff redundancy, safety issues, extended completion date, spoilage of materials, wastages and pilfering due to prolonged abandonment, inflation, litigations. However, the paradigm shifted from safety planning and implementing, auditing and monitoring safety performance to preventive measures of improving safety performance. According to Ikechukwu, and Dorothy (2013); Muhammad, Abdulateef and Ladi (2015) some of the developing nations like Nigeria lacks adaptive laws and regulations on health and safety practices. However, the Nigerian National Building Code came on board after several debates and agitation by the representative of stakeholders in the built environment and government under the headship of the Minister of Housing and Urban Development. The National Building Code places responsibility on Builder's to prepare project health and safety plan among others document for effective production process of building projects.

Gallagher (1997) suggested that safety practices of construction companies must covered following aspect of construction processes: commitment of construction managers; making safety expectation known; engaging resident Safety Manager; engagement of safety committee; engaging safety committee, planned hazard identification, risk assessment and hazard elimination control; and far reaching inspections measures. Bamisile (2004) maintained that project health and safety plan is essential for all construction project starting from the measures that is needed to be put in place from planning phase, through design, construction, up to completion and maintenance phase of the building production processes. There are twenty (20) listed parameter in the project health and safety plan this include: project safety policy, objective plan, risk and hazard assessment, duties of employers', duties of site personnel, health and safety briefing, health and safety committee, site accommodation and welfare facilities, accident preventives measures, protective clothing and equipment, permit to work, access and egress to work, underground observations and buried services, First aid, control of hazardous substances, emergency response plan and safety records (Bamisile, 2004).

In assessing current state of safety practices of the Nigerian indigenous construction firms, Nzuve and Lawrence (2012) opined that inadequate compliance with health and safety rules on project sites were due to low level of supervision of construction workers. Olutuase (2014) noticed that health and safety practices in Nigeria is ineffective and lacks proper documentation when compared with the international standards. Kolawole (2014) stated that site workers embraced safety training in enhancing workers performances and reduced accidents on site. **Ogundipe *et* al., (2018)** established that insufficient knowledge on safety education has limited Safety Managers ability to coordinate safety practices and develop Safety Policy for the management of building production processes.

Akinwale and Olusanya (2016) established high level of awareness on the importance of Occupational Safety but there was inadequate investment made towards enhancing workers capacity development on safety programmes in majority of the construction companies. However, Okoye, Ezeokonkwo, and Ezeokoli (2016) argued that safety awareness and compliance among the sites operatives was at infant level and this has caused low project performance. The study stressed that, knowledge and compliance with health and safety practices alone could not achieve optimum project performance, it would require safety culture which encompassed other factors such as: management commitment, workers involvement and strict enforcement of safety regulation.

Idoro (2010), Ibrahim, Daniel and Ahmad (2014) and Ibrahim, Githae and Stephen (2014) postulated that between 50-100% public and private clients involves Nigerian Indigenous construction companies in traditional and non-traditional procurement systems. Though there are no reliable construction accidents data in Nigeria, in a study conducted by Idoro (2011) it was revealed that accident and injury rates were high in the Nigeria indigenous construction industry and the best safety ratios were 2 accidents per 100 workers and 5 injuries per 100 workers. As matter of fact, the risk of serious injuries is almost three times higher than that of foreign contractors operating in the country (Agwu and Olele, 2013; Muiruri and Mulinge, 2014).

On other note, Builder's liability insurance policy was established under the Insurance Act 2003, demanding client and contractors of buildings project under construction that have more than two floors to obtain insurance cover that will provide succor in case of death, damage to the property under construction and injury to workers (skilled and unskilled labours) who are vulnerable to accident on sites, without neglected passerby and adjoining client around the site provided there is a case of building collapse and other associated risks. Okoye, (2012) opined that contractors widely neglect implementation of construction and contractors all risk insurance for the construction operatives, unless they are forced to do so in other to secure Federal Government projects. Dodo (2014) argued that some construction firms neither have safety insurance plan for their workers nor facilitate payment of compensation for the injured workers.

Safety practice of indigenous companies remained an issue of concern in the Nigerian construction industry. Violation of safety rules seems to be a predominant practice and common phenomenon of indigenous construction companies while workers are trying to make work faster because most construction managers place more value on productivity than safety (Fellows *et al.,* 2002). Okeola (2009) stated that in Canada, projects that involve appointment of resident Safety Manager have better safety performance records than others without Safety Managers because they ensure that both human and materials resources are managed effectively on site. Okoye (2012) listed out the following usual practices of construction workers on sites in Nigeria, they include: working bare footed, use of bamboo scaffolds, hand mixing of concrete without protective wears as some of the unsafe practices among workers.

Agbede, Manu, Agbede and Mahamadu (2016) revealed that contractors in South Western Nigeria have implemented safety policy that covers safety briefing and also uses audio, video and print media in communicating safety information to operatives on sites. However, area such as engaging resident Safety Manager on construction sites; training of the new staff

on the related jobs and the use of tools and equipment site; reward workers that exhibit excellent safety performances; testing the competence of the skilled labour and their adaptability to working environment; availability of the internal and external health and safety department; setting safety guidelines into the body of conditions of contract were less implemented.

Factor Preventing Effective Use of Safety Wears on Construction Sites.

Several authors has worked on health and safety management on construction site, but adequate consideration have not be given to proactive measures of effective use of safety wears on workers wellbeing. This is due to its active role of modifying the behaviour of workers which will reluctantly yield a greater influence towards improving safety behaviour (Mat Zin and Ismail, 2011).

Many factors have been considered why workers lack effective use of safety wears, though the cause of occupational accidents have been classified into unsafe conditions and unsafe behaviour (Elufidipe, 2009). For example Irizarry, Simonsen, and Abraham (2005) argued that contractors sometime overlook their workers from using safety wears because they perceived that its use could increase time taken by the workers to complete their daily output, which in turn impedes their productivity. The study conducted by Aksom and Hadikusumo (2007) found out that most common unsafe acts that frequently occur on construction sites in Thailand is a as failure of workers to use safety wears, improper lifting or handling of materials, and keeping sharp objects in wrong positions.

Based on the study conducted by Krishnamurthy (2006) on safety practices on high rise design and construction, the study established that workers ignorance, negligence, carelessness, over-confidence and workers disregarding proper use of safety wears were the major factors affecting safety practices. Farooqui *et al.,* (2007) opined that, unsafe conditions coupled with the use of improper safety wears contributed to high rate of accidents on construction sites. The outcome of Okeola (2009) study articulated that, workers are prone to injuries at work setting because of the lack of appropriate approach and right attitude in which contractors disregarded compliance with Occupational Health and Safety (OHS).

Umeokafor *et al.,* (2014) stated that unemployment have made workers to disregarded compliance with safety practices by accepting risky jobs. Guldenmund, Cleal and Mearns (2013); Boustras *et al., (*2015); Koehn, Kothari and Pan cited in Awwad, Souki, and Jabbour (2016) noted that workers low wages and willingness to accept risky job as a means of survival remained the majors cause of accidents. Muhammad *et al.,* (2015) argued that any attempt to implement health and safety programs on construction site would increase the overall cost of the projects.

Further assessment showed that for the past two decades researchers could not established the use of safety wears as part of Artisans apprenticeship, it is a general believe that safety wears were against their traditional training and practices (**Ogundipe, 2017).** Hence, Bruno *et al.,* (2012) proposed that around 81.1% of Nigerian construction Sites labourers didn't use safety wears because they are of opinion that safety wears are either curiously large/undersized or overwhelming. Kuroshi (2015) opined that there are skill gaps in Nigerian construction industry, especially Artisans and Craftsmen lacks necessary knowledge, skills and experience required to undertake their tasks competently. He stressed that what most of the Artisan possesses are simple skills that was learnt informally and/or on-the-job, and there are gaps between the skills required on the job and the actual skills possessed by the employees.

Safety Improvement Measures and Control Systems in Construction Industry.

Issue of safety on construction project should be a concern to every construction participant, especially client and their representative need to avert the risk associated with their project right from the planning stage by adopting sustainable strategies and practices that will eliminate possibility of accident. Asfahl (1999) stated in order to prevent equipment failure from overuse and overload examination of scaffold, equipment and tools must be carried out before the start of work by Safety Manager. Abdelhamid and Everett (2000) added that continuous monitoring of safety wears compliance and framing comprehensive purchase policy are responsibility of safety department. The provision and effective use of safety wears is significant element in terms of accident prevention and control on construction sites.

Bust, Finneran, Hartley and Gibb (2014) stated that professionals' interests must be enhanced towards safety practices and usage of awareness measures, must be put in place and demonstrated by the operatives as one of the real need to upgrade construction project safety. Agwu and Olele (2014) worked on fatalities in the Nigerian construction industry. The study supported the fact that, inclusion of positive safety culture by investing in machines and technology (socio-technical investments) in the Nigerian construction industry would resort in better safety performance of employees (reduced rate of unsafe acts) and the company (reduced rate of fatalities). This was conducted for a year with the respondents randomly selected from twelve construction industry, two each across the six geopolitical zones in Nigeria. There is significant different between poor safety culture and increased rate of fatalities in the Nigerian construction industry.

Che Hassan, Basha, Wan Hanafi (2007) and Shamsuddin, Ani, Ismail, Ibrahim (2015) argued that workers knowledge and understanding of safety practices at work setting remain vital in promoting safety among themselves on construction site. Dozzi and AbouRizk (1993) and Funso, Samml and Gerryshom (2016) opined that, workers motivation, safety practices at work, environmental factors and physical limitation amount to factors that could improve workers performance. Agwu and Olele (2014) stated that regular staff training could improve hazard identification skills, engage managers and workers in addressing safety related issues, regular site safety, safety committees and eliminate potential workplace hazards and making hazard identification/reporting everyone's duties. Osonwa, Eko and Ozah (2015) study

revealed that training on the use of safety wears, would create awareness on the implications of inhaling wood dust on workers' health. In addition, Muhammad *et al.,* (2015) suggested the following improvement strategies towards enhancing safety practices, they include: provision of health and safety policies, appointment of Safety Managers/supervisor on sites to ensure compliance and as well make provision for severe punishments should any contractors violate the said safety policy.

From the foregoing, construction workers play a very significant role in achieving success of construction projects. At the same time workers related hazard is not a new phenomenon at work, as it has been established in some of the past studies. But how safety practices are violated in the management of construction project needs urgent and proactive attention. Therefore, efforts should be geared towards improving effective use of safety wears on indigenous construction sites.

RESEARCH METHODS

The study adopted survey design where samples were drawn from the medium scale indigenous contractors in South Western Nigeria (Lagos, Ogun, Osun, Oyo, Ekiti and Ondo). Past researches has shown that over 80% of the Nigerian indigenous construction companies that registered with the Federal Registration Board of Nigeria have their addresses in Lagos, Abuja and Port Harcourt Fagbenle, Aderemi, and David (2004) and Olaleye (2008). Though there is no readily available data to show the number of construction sites in the study area but Lagos Islands (Victoria Island, Lekki and Ajar) house the larger percentage of construction activities in Lagos State due to the fact that Lagos State is located in Western Nigeria and has attracted sophisticated investment like Eko Atlantic city, Lekki free trade zone, Dangote petroleum refinery, Lekki deep Sea Port and Lagos Island International Airport (Ogunde *et al.,* 2017; Ogundipe, 2017).

The research method was designed into three phases, the preliminary phase, established background information on the subject of health and safety through literature search and review. The second phase focuses on direct observation and interview, based on the established background and literature review. The third phase developed some of the key issues captured in the previous phases into Likert scale questionnaire. The collection instruments were targeted at obtaining useful information on safety practices in construction projects from the indigenous firms in South Western Nigeria.

Sample size for the study was determined through Sediary, (1994) $n = n'/ (1+ (n'/N))$

Where, n= sample size

$n'= s/v$,

N = total estimated population,

v = standard error of the sampling population.

Total error= 0.1 at a confidence level of 95%

$s = (p) X (1- p) = (0.5) X (0.5) = 0.25$.

Therefore, based on the above formula thirty two (32) construction project sites handled by the indigenous firms were located based on snowball and random sample techniques. Four (4) respondents i.e. two professional, one skilled and one unskilled (site operatives) respondents were randomly selected from each of the project sites which equals to sixty four copies of questionnaire for the professionals and site operatives totaling one hundred and twenty eight (128) copies of questionnaire. One hundred and thirteen (113) copies of questionnaire were returned and analyzed justifying eighty eight percent (88%) response rate.

DATA ANALYSIS, RESULTS AND PRESENTATION

Mean Score was used to rank respondents opinion on current state of safety practices on building construction project. The five-point Likert Scale ranged from 1 (totally disagree) to 5 (highly agree) was adopted where W is the weighting assign to each factor by the respondents ranging from 1(totally disagree) to 5 (highly agree), HA is the highest weight (i.e. 5 in this regard), and N is the total number of respondents. An independent-samples t-test was adopted to determine the significant of various factors preventing effective use of safety wears. Mann-Whitney U Test was used to test for differences between two independent groups on safety improvement measures and control systems.

Table 1 showed that **16(32%)** of the professional respondents had HND certificate, **15(30%)** with B.Tech./B.Sc. certificate while respondents with M.Sc. scored the highest **19(38%)** compared to **21(33%)** of the site operatives had SSCE, **30(48%)** possess National Vocational training and **12(19%)** advance craft certificate respectively. This justified that larger percentage of the respondents were highly qualified and knowledgeable enough to answer the questions. On the category of their operations, **41(82%)** of the professional respondents were site managers only **7(14%)** were Safety Managers while **32(51%)** of the site operatives respondents were skilled labourers, followed by **15(24%)** unskilled labourers, **10(16%)** sub-contractors and **6(9%)** that are foreman.

Table 1: Background information of respondents

Professional			**Site operatives**		
Demographic Information	**Freq.**	**Pert.**	**Demographic Information**	**Freq.**	**Pert.**
Academic qualification			**Academic Qualification**		
HND	16	32.0	SSCE	21	33.0
Pgd/BSc/B.Tech	15	30.0	National vocational training	30	48.0
MSc/MBA/MPM	19	38.0	Advance craft certificate	12	19.0
Category of operation			**Category of operation**		
Site manager	41	82.0	Skilled Labour	32	51.0
Safety Manager	7	14.0	Unskilled Labour	15	24.0
Project manager	2	4.0	Sub-Contractors	10	16.0
Age of respondent			Foreman	6	9.0
15-20	1	2.0	**Age of respondent**		
21-30	18	36.0	15-20	11	8.0
31-40	16	32.0	21-30	25	35.0
41-50	13	26.0	31-40	29	45.0
51-60	2	4.0	41-50	1	2.0
Industry years of experience			**Industry years of experience**		
1-5	15	30.0	1-5	23	36.0
6-10	10	20.0	6-10	15	24.0
11-15	8	16.0	11-15	23	37.0
16-20	14	28.0	16-20	1	2.0
20 years above	3	6.0	20 years above	1	2.0
Number of men working in a gang			**Number of men working in a gang**		
1-4	16	32.0	1-4	20	32.0
5-8	19	38.0	5-8	27	43.0
9-12	5	10.0	9-12	11	15.0
13-16 and above	10	20.0	13-16	5	8.0

Source: *Researcher's Field survey (2017)* Professional (N= 50) Site operatives (N=63)

Furthermore, percentage distribution of the respondents based on their age bracket showed that (68%) of the professional respondent age range between 21-40 years as against (26%) whose age range are above 41 years. It was a different case as (81%) of the site operatives respondents were within the age range of 21-40 years. It can be established that the respondents for this study have good knowledge of building construction because (44%) of the professional respondents have more than ten years of working experience compared to (20%) that have more than six years of working experience. Meanwhile, (39%) of the site operatives have more than ten years of working experience compared to (36%) that have less than 6 years of experience. Lastly, table 1 also explored number of men working in a gang from the study area. Sixty eight percent (68%) of the professional and site operatives respectively have more than 5 men in their gang.

Objective one: Current State of Safety Practices on Construction Sites by the Indigenous Firms' Workers.

First objective of the study assessed respondents' level of agreement on current state of safety practices on construction site in Lagos State using some selected safety performance criteria on a Likert scale 1 – 5 (1. not practiced, 2= less practiced, 3= sometime practiced, 4= moderately practiced, 5=often practiced), Mean Item Score was used to rank respondents perception.

Table 2: Current state of safety practices on construction sites by the indigenous firms' workers.

Safety practice parameter	Site operative	Scores	Professional	Scores	Overall	Scores
	Mean	Rank	Mean	Rank	Mean	Rank
Provision of temporary fence on site	3.94	1st	4.26	1st	4.07	1st
Provision of accidents prevention procedure and safety consciousness on site	3.92	3rd	4.12	2nd	3.96	2nd
Development and frequently review of safety policy for building production projects.	3.94	1st	3.68	7th	3.90	3rd
Daily safety briefing	3.92	3rd	3.72	5th	3.74	4th
First aid box, safety gadgets site accommodation and welfare facilities are always made available on site.	3.19	15th	3.78	4th	3.73	5th
Engaging safety committee in investigating and auditing cause of accidents	3.52	8th	3.60	10th	3.59	6th
Examination of scaffold, equipment and tools before the start of work Safety Manager.	3.57	6th	3.66	8th	3.58	7th
The use of personal protective equipment 'PPE'	3.13	17th	3.60	10th	3.51	8th
Training of the new staff on their related jobs and the use of tools and equipment	3.57	5th	3.56	15th	3.50	9th
Testing the competence of the skilled labour and their adaptability to working environment	3.32	13th	3.75	5th	3.47	10th
Engaging employees planning issues relating to health and safety organisation	3.33	12th	3.60	10th	3.44	11th
Setting safety guidelines into the body of conditions of contract.	3.40	10th	4.10	3rd	3.44	11th
Engaging resident Safety Manager on construction sites.	3.14	16th	3.58	13th	3.41	13th
Availability of the internal and external health and safety department	3.40	10th	3.58	13th	3.40	14th
Proper arrangement of waste on site.	3.21	14th	3.66	8th	3.34	15th
Use of safety net where the height of building exceeded two storeys	3.56	7th	3.08	18th	3.32	16th
Construction and contractors all risk insurance for the project, staff and site operatives	2.94	18th	3.48	16th	3.25	17th
Obtaining of health and safety clearance/ certificate.	3.48	9th	3.24	17th	3.21	18th

Source: *Researcher's Field survey (2017)*

Table 2 showed no agreement on if first aid box and welfare facilities were always made available on sites as it was ranked **(15th, 3.78)** by the site operatives against **(4th, 3.74)** of professional respondents. Secondly, the use of personal protective equipment/safety wears was perceived as irrelevant to the site operatives as it was ranked **(17th, 3.60)** compared to that of professional respondents **(10th, 3.59).** Engaging resident Safety Manager on construction sites was ranked **(13th, 3.41),** this also conformed to the outcome of low percentage of professional respondents who are Safety Managers as shown in t**able 1.** Furthermore, the result of professional respondents' revealed that setting safety guidelines into the body of conditions of contract are often practiced as it was ranked **(3rd, 4.10),** compared with site operatives responses that was ranked **(10th, 3.10)**.

However, five most frequently embraced among the parameters listed on project sites according to overall mean scores were: provision of temporary fence at the boundary of the sites **(1st, 4.07),** provision of accidents prevention strategy and safety consciousness on site **(2nd, 3.96),** development and frequent review of safety policy for building projects **(3rd, 3.90),** daily safety briefing **(4th, 3.74),** and provision of first aid box and welfare facilities **(5th, 3.73).** Meanwhile, others factors tested were equally important as their mean scores above (3) points out of (5) points in the Likert scale.

Objective two Identified Factors Preventing Effective Use of Safety Wears on Construction Sites

Second objectives identified factors preventing site operatives from using safety wears on construction sites on a Likert scale 1 –

5 (1= totally disagreed, 2= disagreed, 3= slightly agreed, 4= moderately agreed, 5= highly agreed).

There is significant difference on lack of proper training on effective use of safety wears score, professional respondents' **(*M* = 3.94, *SD*= *0.956)*** and site workers **(*M* = 3.21, *SD* = 1.35; *t* (109.77) = 3.38, *p* = .001 two-tailed).** The magnitude of the differences in the means **(mean difference = .734, 95% *CI*: .304 to 1.16)** was moderate effect **(eta squared = .09).** In the same vein, there was significant difference on adaptability of workers to safety practices as it was against the traditional practices, professional respondents' recorded **(*M* = 3.96, *SD*= *0.88)*** as against site workers **(*M* = 3.41, *SD* = 1.01; *t* (111) = 3.03, *p* = .003 two-tailed).** The magnitude of the differences in the means **(mean difference = .54, 95% *CI*: .184 to 0.906)** was moderate effect **(eta squared = .08).** There was significant difference on operatives engagement in improper conduct that could influence others workers, professional respondents' recorded **(*M* = 3.92, *SD*= *0.966)*** and site workers **(*M* = 3.30, *SD* = .944; *t* (111) = 3.42, *p* = .001 two-tailed).** The magnitude of the differences in the means **(mean difference = .618, 95% *CI*: .26 to .98)** was large effect **(eta squared = .10).** There was significant difference on lack of proper knowledge on hazards management, professional respondents' recorded **(*M* = 4.02, *SD*= *1.1.08)*** and site workers **(*M* = 3.40, *SD* = 1.08; *t* (110.81) = 2.65, *p* = .009 two-tailed).** The magnitude of the differences in the means **(mean difference = .6632, 95% *CI*: .157 to 1.09)** was large effect **(eta squared** = .06).

Table 3: Independent Samples Test on identified factors preventing effective use of safety wears on construction sites

	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	T	Df	Sig. (2-tailed)	Mean	Std. Deviation
Unethical practices of worker due to human attitudinal peculiarities and traditional believes.	4.693	0.032	-0.095	111	0.924	3.82	0.873
			-0.100	106.434	0.920	3.84	1.370
Unsafe practices of worker due to religious assertions	2.616	0.109	0.534	111	0.595	3.84	1.235
			0.518	90.379	0.606	3.73	0.954
Willingness of the workers to meet their daily output.	0.149	0.701	-0.968	111	0.335	3.56	0.972
			-0.976	108.232	0.331	3.75	1.047
Inadequate engagement of Safety Managers and ineffective supervision on sites.	19.184	0.000	4.668	111	0.000	4.34	0.772
			4.918	105.145	0.000*	3.40	1.251
Insufficient instructions about the working condition and environment.	4.520	0.036	1.601	111	0.112	4.00	0.926
			1.639	110.895	0.104	3.68	1.133
Safety wears is not comfortable to work with.	0.208	0.649	-0.045	111	0.965	3.10	1.359
			-0.044	102.403	0.965	3.11	1.284
Workers inadequate or lack of understanding about the workplace safety rules.	18.847	0.000	2.488	111	0.014	4.02	0.869
			2.617	105.686	0.010*	3.46	1.389
Carelessness and over-confidence of workers	14.863	0.000	0.387	111	0.700	3.92	0.853
			0.403	109.380	0.688	3.84	1.221
Lack of proper training on effective use of safety wears.	7.969	0.006	3.256	111	0.002	3.94	0.956
			3.382	109.768	0.001*	3.21	1.346
Ineffective communication between health and Safety Managers and workers.	1.513	0.221	-1.345	111	0.181	3.42	0.906
			-1.378	110.949	0.171	3.68	1.119
Adaptability of workers to safety practices as it was against the traditional practices.	1.208	0.274	3.026	111	0.003*	3.96	0.880
			3.075	110.007	0.003	3.41	1.010
Operatives' engagement in improper conduct that could endanger their safety.	0.991	0.322	3.424	111	0.001*	3.92	0.966
			3.415	104.176	0.001	3.30	0.944
Lack of proper knowledge on the hazards management.	15.204	0.000	2.569	111	0.012	4.02	1.078
			2.650	110.807	0.009*	3.40	1.420

Source: *Researcher's Field survey (2017)* *Significant at 5% level (p≤.05)

Table 3 showed results of an independent samples t-test conducted on identifying factors preventing effective use of safety wears on construction sites between the scores of site operatives and professionals at significant level of 5% (p≤.05). Out of thirteen variables tested. There was significant difference on inadequate engagement of Safety Managers and ineffective supervision on site scores of the professional respondents' **(*M* = 4.34, *SD= 0.772)*** and site workers **(*M* = 3.4, *SD* = 1.25; *t* (105.15) = 4.92, *p* = .00 two-tailed).** The magnitude of the differences in the means (mean difference **= .94, 95% *CI*: .56 to 1.32)** was large effect **(eta squared = .18).** There was also significant difference on workers inadequate or lack of understanding about the workplace safety rules scores for professional respondent's **(*M* = 4.02, *SD= 0.87)*** and site workers **(M = 3.46, SD = 1.39; t (105.69) = 2.62, p = .01 two-tailed).** The magnitude of the differences in the means **(mean difference = .56, 95% CI: .14 to .98)** was moderate effect **(eta squared = .06).**

Table 4: Safety Improvement Measures and Control Systems Available for Safety Practices and Compliance on Construction Sites.

	Mann-Whitney U	Z	Sig.	Professional Median	Site Operative Median	R	Decision
Routine check on plant and equipment.	1,417.50	-1.029	0.303	5	5	0.10	SE
Use of safety audio, video and visual displaying gadgets on site.	1,058.50	-3.234	0.001*	4	5	0.30	ME
Daily check of scaffold and ladder etc.	1,173.50	-2.474	0.013*	4	4	0.23	SE
Daily consciousness of safety practice on site	1,384.00	-1.217	0.224	4	4	0.10	SE
Daily health and safety briefing	1,547.00	-0.170	0.865	4	4	0.00	VSE
Workers obtaining safety clearance before start of work	1,372.00	-1.223	0.221	3	3	0.10	SE
Deduct wages of workers who failed to use PPE	1,371.00	-1.223	0.222	4	4	0.10	SE
Inclusion of safety matters from the planning phase	1,138.00	-2.695	0.007*	4	4	0.30	ME
Improved site layout planning	1,376.50	-1.224	0.221	4	4	0.10	SE
Assigning safety responsibility to all levels	1,344.50	-1.417	0.157	4	4	0.10	SE
Setting safety guidelines into conditions of contract.	1,243.00	-2.046	0.041*	5	4	0.20	SE
Institute safety awards to motivation workers.	1,526.00	-0.301	0.763	4	4	0.30	ME
Reward workers that exhibit excellent safety performances	1,254.00	-1.942	0.052	4	3	0.20	SE
Allocate budget for safety management	1,385.00	-1.157	0.247	4	4	0.10	SE
Conduct in-house safety training	1,215.00	-2.017	0.044*	4	4	0.20	SE
Provision of safety booklet in various languages	1,091.50	-2.292	0.004*	3	4	0.30	ME
Distribute pocket size copy of safety ethics to workers	1,400.00	-1.074	0.283	4	3	0.10	SE
Proper waste management on site	1,141.50	-2.632	0.008*	4	4	0.20	SE

Source: *Researcher's Field survey (2017)* *Significant at 5% level (p≤.05)

Cohen (1988); Pallant (2013) criteria.1=small effect, .3=medium effect, .5=large effect.

Result of Mann-Whitney U Test showed that there exist statistically significant difference on safety improvement measures and control systems available for safety practices and compliance on construction sites. Out of eighteen (18) listed variable, there was no statistically significant difference on routine check on plant and equipment between professionals (***Md* = 5, *n* =50)** and site operatives **(*Md* =5, *n* = 63), *U* = 10416, *z* = –1.03 *p* = .30, *r* = .10** and this would general small effect. There was a statistically significant difference on the use of audio, video and visual displaying gadgets between professionals **(*Md* = 4, *n50* =)** and site operatives **(*Md* =5, *n* = 63), *U* = 1058, *z* = –3.23,*p* = .30, *r* = .03,** and this could generate medium effect, no statistically significant difference on daily check of scaffold and ladder etc. between professionals (***Md* = 4, *n* =50)** and site operatives **(*Md* =4, *n* = 63), *U* = 1173, *z* = –2.47 *p* = .01, *r* = .23.,** and this would general small effect. There was a statistically significant difference on inclusion of safety matters from the planning phase, between professionals **(*Md* = 4, *n* =50)** and site operatives **(*Md* =, *n* = 63), *U* = 1138, *z* = –2.70 *p* = .01, *r* = .30,** and it would generate medium effect, institute safety awards to motivation workers, between professionals **(*Md* = 4, *n* =50)** and site operatives **(*Md* =, *n* = 63), *U* = 1526, *z* = –0.30 *p* = .30, *r* = .30,** medium effect, there was a statistically significant difference on provision of safety booklet in various languages, between professionals **(*Md* = 3, *n* =50)** and site operatives **(*Md* =4, *n* = 63), *U* = 1092, *z* = –2.29 *p* = .00, *r* = .30,** this will generate medium effect. Finally, there was a statistically significant deference on proper waste management on site, between professionals **(*Md* = 4, *n* =50)** and site operatives **(*Md* =4, *n* = 63), *U* = 1142, *z* = –2.63 *p* = .008, *r* = .20,** and this will generate medium effect**.**

DISCUSSION OF FINDINGS

The study identified low monitoring system and inadequate engagement of Safety Managers on construction sites, in agreement with Muhammad, Abdulateef and Ladi (2015) recommended that in a place where provision are made for health and safety policies, a supervisor should be appointed to ensure compliance, while Several measures and punishments should be meted out to contractors who violate safety policy.

Also, Bust, Finneran, Hartley and Gibb (2014) found that professionals' interests must be enhanced towards safety management and usage of awareness programs must be provided and executed among construction participants as one of the real needs to upgrade construction project safety. Furthermore, setting safety guidelines into conditions of contract was found to be averagely practiced in the construction industry this conformed to Asfahl, (1999) finding that examination of scaffold, equipment and tools before the start of work by Safety Manager is essential in preventing equipment failure from overuse and overload.

Five top ranked factors preventing site operatives from effective use of safety wears out of thirteen listed factors include: adaptability of workers to safety practices as it was against their traditional training, unethical practices of worker due to human attitudinal peculiarities, insufficient instructions about the working conditions, inadequate and ineffective supervision by Safety Managers on sites, workers unsafe practices due to religious assertions. All of these factors are within the control of the Safety and Site Managers and if averted they will go a long way in addressing the issues of safety practices.

Workers adaptability to safety practices was low as it was against their traditional practice and training. It is therefore not surprising that workers have problem adapting to safety practices especially the use of safety wears because it was not part of their training as an apprentice, and subjecting them to the use of these gadgets might require time, training and close monitoring techniques, this was in agreement with Eko and Ozah (2015) finding as training on effective use of safety wears would create awareness on the implications of hazards to workers' health.

However, there still exit gaps between effective supervision, knowledge on hazards management, proper training on effective use of safety wears at work by Site and Safety Managers as they were perceived as factors preventing safety practices. Abdelhamid and Everett (2000) finding stated that safety department of each contracting company should ensure continuous monitoring of safety wears compliance and framing comprehensive purchase policy. It is also important to stress the fact that site operatives lacked proper training on the use of safety wears on sites in addition to ineffective communication between Safety Managers and workers. Agwu and Olele (2014) recommended regular workers training for improving hazard identification skills and engaging Site Managers and workers in addressing safety related issues. Consequently, willingness of workers to meet their daily output was disregarded as factor preventing operatives from using safety wears, as against Aniekwu (2007); Awwad, *et al.,* (2016); Guldenmund *et al.,* (2013); Umeokafor *et al.,* (2014).

Importance must be attached to supervision, control of building workers and effective use of safety wears, while workers must have adequate knowledge on associated risk with their tasks. Ismail, Doostdar and Harun (2012) stated that Site Managers need to conduct enlightenment programs among their workers to get them familiar with the necessities of safety consciousness on site.

CONCLUSION

This study established improvement strategy for safety practices and effective use of safety wears on construction sites. The study is of opinion that constant re-evaluation and safety training should be taken serious especially those construction workers that are more vulnerable to accidents. Since the study established that training of tradesmen does not support the use of safety wears. Therefore, assumption must not be made when recruiting workers especially, the construction firms that have workable safety control systems and policy. It is a must to ensure that every new workers employed on project sites were giving necessary awareness talk regarding safety practices and use of safety wears.

This study concluded and call for improved channels of communication on site, ensure that safety needs for each construction projects are well communicated with site operatives in order to avert current challenges experienced on

project sites. Consequently, Construction Managers should adopt required site base training for the operatives' while Safety Managers should regularly attend refreshing safety courses. Finally, the study call for improvement on engagement of Safety Managers' on construction site and suggests that one Safety Manager should be employ on every construction sites.

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