Evaluation of Building Construction Industries Compliance with Occupational Safety and Health Management Standards in South-South, Nigeria

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Abstract

The study assessed building construction industries compliance with Occupational Safety and Health Management standards in South-South, Nigeria. Two research questions and two hypotheses were formulated to guide the study. The researchers adopted survey research design approach for the study. The population of the study consisted of 566 building construction contractors involved in construction industries in the study area. Considering the population of the study, stratified sampling technique was used to samples 66 contractors from Rivers State and 60 contractors from Akwa State making it a total of 126 building construction contractors. The researchers adopted 80-item ILO-OSH basic activities guidance check-list; faced and content validated by five experts for data collection. Cronbach alpha statistics which yielded reliability coefficient of 0.87 and 0.93 was used for the study. Mean and standard deviation were used in answering the research questions while independent t-test was used to test the null hypotheses at 0.5 level of significance. Findings of the study revealed the challenges facing building construction industries compliance with International Labour Organization's Occupational Safety and Health Management System (ILO-OSHMS) in Rivers State and Akwa Ibom State, Nigeria are inadequate OSHMS control factors compliance; inadequate planning and implementation; inadequate measurement, audit and review. The researchers recommended that construction industries should set up an organizational structure that supports training and encourage middle management to provide adequate opportunity to workers to apply learned concepts in practice.

Keywords: *Health and Safety Practices, ILO-OSHMS Compliance, Building Industries, South-South, Nigeria*

Introduction

The construction industry is vital for economic and social development of every nation; it connects with other sectors of the economy to boost development. Kolo, et al., (2018) stated that construction industry is a major employer of labour especially in developing nations like Nigeria. According to a report by the Nigerian National Bureau of Statistics (NBS, 2020), the construction industry contributes approximately 3.72% to the country's GDP. From an economic perspective, projections suggest that the global construction market will witness substantial growth, potentially reaching $8 trillion by the year 2030 (GCP, 2018). The quest for the provision of adequate houses for all has translated in the increase in activities of building construction industries in developing countries like Nigeria and the inherently hazardous nature of the industries results in adverse effects on the overall performance of construction employees and their respective companies (Ahmed et al., 2018; Kolo, et al., 2018). The construction and materials used in the process of building and finishing structures significantly impact the health and well-being of both construction workers and occupants with likelihood of sustaining injuries and fatalities (Zhou et al., 2015; Nadhim et al., 2016; Ranganathan, 2016). The rate of fatalities and injuries in the construction industry is alarmingly high and continues to rise (Kolo, et al., 2018).

Several factors contribute to the inadequate health and safety performance in the construction industry. These factors according to Robertson et al., (2015), encompass the escalating sociotechnical intricacies in the modern work environment such as works conducted at elevated levels, machinery and equipment utilized on-site, as well as the attitudes and behaviors of workers toward safety protocols leading to construction industry recording three to four times more fatalities than any other sector (Finneran & Gib, 2013; Sousa et al., 2014; ILO, 2015). While the construction industry is often regarded as perilous, it is crucial to recognize that the potential for accidents can be effectively managed through human intervention, particularly in the work situation. Several studies have been conducted to improve compliance to safety in building construction industries by different researchers (Zhou et al., 2015; OSHA, 2015; European Commission, 2017; Mohammadi et al., 2018).

Ensuring workplace safety compliance is very important for every employee, regardless of the industry in which they work. Gou et al. (2015) defined safety compliance as adhering to the rules and regulations, carrying out work in a safe manner while performing a task. Recently, the incorporation of an Occupational Safety and Health Management System (OHSMS) has become prevalent in workplaces and offers a methodical process to minimize the risks of work-related injuries, simultaneously leading to substantial cost reductions in the industries (Nnedinma et al., 2014; OSHA, 2015). An Occupational Safety and Health Management System (OHSMS) stand as a pivotal element in ensuring the efficiency of operations in the construction industry. This system lays the groundwork for construction industries toward continually enhancing Occupational Safety and Health (OSH) performance. Health according to Egbele-Okoro (2020) is characterized as a state of complete physical, mental, and social well-being, extending beyond the mere absence of disease or infirmity.

In Nigeria, Agwu and Olele (2013) pointed out the absence of reliable data on accident cases within the building construction industry, owing to the industry practitioners' failure to report incidents to the appropriate authorities or maintain adequate records. Costs are incurred in compensating accident victims, providing treatment for those involved, repairing or repurchasing machinery and equipment, recruiting replacements, and covering overtime expenses to complete the work, ultimately leading to reduced profitability (Ying, et al., 2018). Egbele-Okoro (2020) identified various causes of accidents in the construction industry in Nigeria, including inadequate OSHMS control factors compliance; inadequate planning and implementation; inadequate measurement, audit and review. The consequential loss of workdays and diminished work rates further compound these challenges (Zainon, et al., 2018). It is therefore imperative and of paramount importance to investigate the health and safety issues confronting workers in the industry and develop safety strategies to mitigate the challenges. Hence, this research examined the degree of construction industries compliance with the International Labour Organization's Occupational Safety and Health Management System (ILO-OSHMS) guidelines and proffer strategies to minimize the number of work-related incidents in building construction industries in South-South Geopolitical Zone, Nigeria.

Statement of the Problem

Quantifying the health and safety issues in terms of fatalities, injuries, and work-related illnesses proves challenging as data reporting methods vary across different countries. With a significant proportion of both fatal and non-fatal accidents occurring in the construction sector, construction companies are consistently exploring diverse strategies to minimize the number of work-related incidents. In Nigeria, Okwelle and Normakoh (2019) evaluated the Health, Safety, and Environment Procedures in workshops in Technical Colleges in Rivers State revealed a significant deficiency in the awareness and adherence to Health, Safety, and Environment procedures. Despite this, research focusing on typically assessing construction industries compliance to International Labour Organisation, Occupational Safety and Health Management System (ILO-OSHMS) in South-South geopolitical Zone of Nigeria remains scarce. Therefore, this study bridged this gap by assessing the Health and Safety practices in building construction industries in Rivers State and Akwa Ibom State of Nigeria. The ultimate goal is to examine the degree of building construction industries compliance with the International Labour Organization's Occupational Safety and Health Management System (ILO-OSHMS) guidelines to minimize the occurrences of accidents, injuries, and work-related illnesses on construction sites.

Objectives of the Study

The objectives of the study was to determine:

1. The extent of Building construction industries compliance with International Labour Organisation, Occupational Safety and Health Management System (ILO-OSHMS) in Rivers State and Akwa Ibom State, Nigeria.
2. The challenges facing Building construction industries compliance with International Labour Organisation, Occupational Safety and Health Management System (ILO-OSHMS) in Rivers State and Akwa Ibom State, Nigeria.

Research Questions

In order to solve the research problem, two research questions were formulated to guide the study as follows:

1. To what extent are Building construction industries compliance with International Labour Organisation, Occupational Safety and Health Management System (ILO-OSHMS) in Rivers State and Akwa Ibom State, Nigeria?
2. What are the challenges facing Building construction industries compliance with International Labour Organisation, Occupational Safety and Health Management System (ILO-OSHMS) in Rivers State and Akwa Ibom State, Nigeria?

Research Hypothesis

Based on the research questions, the following hypothesis will be tested at .05 level of significance:

$H0_2$: There is no significant difference in the mean response of building construction contractors' compliance with International Labour Organisation, Occupational Safety and Health Management System (ILO-OSHMS) in Rivers State and Akwa Ibom State, Nigeria.

$H0_3$: There is no significant difference in the mean response of building construction contractors on the challenges facing Building construction industries compliance with International Labour Organisation, Occupational Safety and Health Management System (ILO-OSHMS) in Rivers State and Akwa Ibom State, Nigeria.

Research Methodology

This section describes the design of the study, area of the study, population of the study, validation of the instrument, reliability of the instrument, method of data collection, method of data analysis, decision rule and ethical issues used in the study.

Design of the Study

This research work adopted the survey research design approach. The research method was suitably adopted because the study seeks to assess the current status quo in any given research incident (Nworgu, 2015).

Area of the Study

The study area of the study was Rivers State and Akwa Ibom State in South-South Geopolitical Zone of Nigeria. The South-South Geopolitical which is primarily the study area for this research is otherwise referred to as the Niger Delta region.

Population of the Study

The population of the study consist mainly of contractors involved in Rivers State and Akwa Ibom State construction industry. In the South-South Geopolitical Zone, there is no reliable data on the population frame; hence a pilot survey was conducted to gather data for the population frame. The survey was carried out by visiting the Ministry of Works, Ministry of Lands and Housing, Niger Delta Development Commission, Federal Road Maintenance Agency. From these agencies it was realized that five hundred and sixty-six (566) contractors were identified to form the population frame. A breakdown of the population is shown in Table1.

S/N	STATES	Number of contractors
1.	Akwa Ibom	92
2.	Bayelsa	74
3.	Cross River	77
4.	Delta	108
5.	Edo	83
6.	Rivers	132
TOTAL		566

Table 1: Breakdown of population frame Source: Researchers field study (2023)

Sample and Sampling Technique

Considering the population of the study, stratified random sampling technique was used to draw samples of 66 from Rivers State and 60 from Akwa Ibom State making it a total of 126 building construction contractors. Aboh (2011) defined stratified random sampling as a random sample in which members of the population are first divided into strata, and then are randomly selected to be part of the sample.

Instrumentation

The researcher developed 80-item instrument titled "Building Construction Safety Inspection Checklist (BCSIC) used for data collection. The instrument was divided into sections. Section A comprised of staff demographic data. Section B, Item 1 contained items on Building construction industries compliance with ILO-OSHMS while Item 2 contained items on challenges facing Building construction industries compliance with ILO-OSHMS in Rivers State and Akwa Ibom State, Nigeria. The instrument was designed with a 4-point rating scale of Strongly Agreed (SA=3.50-4.00), Moderately Agreed (MA=2.50-3.49), Disagreed (D =1.50-2.49), Strongly Disagreed (SD =1.00-1.49) to the answer research questions.

Validation of the Instrument

The instrument was faced and content validated by five experts in the Department of Industrial Technology Education from the University of Uyo, Uyo. The experts examined the contents of the instrument with respect to their constructs, how well they depicted the tasks and sequencing. They also ensured that clarity, appropriateness of language, ability to elicit accurate information and suitability in line with the objectives of the study and research questions. The expert comments, corrections and modification were incorporated into the final copy of the instrument. Their suggestions lead to adjustment in the instrument, especially in terms of ambiguous statements, excessive wordiness, difficult vocabulary and numbers of items.

Reliability of the Instrument

The questionnaire used in this research was administered to fifteen (15) health and safety officials in the construction industry who were not part of the study. Their responses were used to assess how valid the contents of the questionnaire. Cronbach alpha statistics which yielded reliability coefficient of 0.87 and 0.93 of the instruments was used for the study. Cronbach Alpha is considered suitable to ascertain the internal consistency, reliability and suitability of the instrument.

Method of Data Collection

Data for the study was collected with the use of Construction Safety Inspection Checklist (CSIC). Permission was sought from relevant authorities in the construction industries before the instrument was administered to the respondents. The researchers were assisted by three research assistants who were briefed before administration of the instrument to the respondents. The researchers and the assistants visited the building construction contractors in the study areas to administer the instrument for a period of four weeks.

Method of Data Analysis

Mean and standard deviation were used in answering the research questions while independent t-test was used to test the null hypotheses at 0.5 level of significance.

Presentation of Results

Research Question 1: To what extent are Building construction industries compliance with International Labour Organisation, Occupational Safety and Health Management System (ILO-OSHMS) in Rivers State and Akwa Ibom State, Nigeria?

Table 2: *Building construction industries compliance with International Labour Organisation, Occupational Safety and Health Management System (ILO-OSHMS) in Rivers State and Akwa Ibom State, Nigeria*

S/No.	Building construction industries Compliance with ILO-OSHMS	Rivers State			Akwa Ibom State		
		Mean	SD	Mean	SD	Mean	SD
A.	**Policy Generation**						
1.	Consultation with stakeholders	2.81	1.26	MA	2.86	1.30	MA
2.	Adequate control of Hazard	2.65	1.33	MA	3.42	1.21	MA
3.	Proper allocation of Finance for Health and Safety	3.40	1.24	MA	2.67	1.26	MA
4.	Regular inspection and Incident Report	2.51	1.05	MA	3.14	1.23	MA
5.	Continuous improvement and communication	2.65	1.27	MA	2.50	1.24	MA
	Cluster Mean	**2.80**	**1.23**	**MA**	**2.92**	**1.25**	**MA**
B.	**OSHMS Organization**						
1.	Input by top Artisans in OSHMS organization	3.17	1.07	MA	3.10	1.31	MA
2.	Provision and maintenance of workplaces, machinery etc.	3.39	1.24	MA	2.74	1.33	MA
3.	Training of First Aid procedures and facilities	3.48	1.29	MA	3.42	1.29	MA
4.	Provision of insurance	3.20	1.31	MA	3.37	1.25	MA
5.	Provision of infrastructure and equipment	2.76	1.31	MA	2.80	1.32	MA
6.	Provision of workers Handbook memos and Email as a means of OSH Communication	2.63	1.26	MA	2.83	1.30	MA
7.	Training on fire, emergency Procedure and PPE provisions, limitations and maintenance	2.95	1.29	MA	2.66	1.28	MA
8.	Provision toolbox utilization awareness as a means of OSH communication	3.22	1.08	MA	2.61	1.28	MA
9.	Training of workforce on OSHMS	2.33	1.19	MA	3.26	1.23	MA
10.	Provision of Technical Support	3.01	1.16	MA	2.43	1.26	MA
	Cluster Mean	**3.01**	**1.22**	**MA**	**2.92**	**1.29**	**MA**
C.	**Planning and Implementation**						
1.	Provision of emergency procedures to control likely incidents	2.49	1.29	MA	3.47	1.26	MA
2.	Provision of suitable and sufficient emergency rescue arrangement	3.27	1.26	MA	2.85	1.28	MA
3.	Provision of training for high-risk task	3.13	1.22	MA	2.83	1.24	MA
4.	Provision safety policy for working in confined spaces	2.87	1.25	MA	2.49	1.29	MA
5.	Frequent risk analysis	2.95	1.30	MA	3.27	1.26	MA
6.	Provision of equipment for safe access and exit	3.33	1.37	MA	3.13	1.22	MA
7.	Training on risk to health and safety due to chemicals, physical and biological substances	2.68	1.24	MA	2.87	1.25	MA
8.	Provision of respiratory equipment and other PPE while working in confined spaces	3.46	1.28	MA	2.95	1.30	MA
9.	Provision of efficient workplaces, equipment and processes	2.73	1.23	MA	3.33	1.37	MA
10.	Testing of the atmosphere while working in confined spaces	2.49	1.29	MA	2.68	1.24	MA
	Cluster Mean	**2.94**	**1.27**	**MA**	**2.99**	**1.27**	**MA**
D.	**Measurement, Audit and Review**						
1.	Provision of emergency procedures to control likely incidents	3.35	1.18	MA	3.42	1.07	MA
2.	Provision of suitable and sufficient emergency rescue arrangement	3.42	1.20	MA	3.45	1.24	MA
3.	Provision of training for high-risk task	3.16	1.34	MA	3.38	1.29	MA
4.	Provision of safety policy for working in confined spaces	3.10	1.36	MA	3.14	1.31	MA
5.	Adequate awareness, knowledge, skill and competence of OSHMS	2.69	1.36	MA	3.45	1.24	MA
	Cluster Mean	**3.14**	**1.29**	**MA**	**3.37**	**1.23**	**MA**

E.	OSHMS Control Factors						
1.	Issuance of correct PPE for task	3.27	1.36	MA	2.95	1.29	MA
2.	Provision of accident investigation and analysis report	3.19	1.22	MA	3.22	1.08	MA
3.	Provision of procedures in the issue, use and maintenance of PPE	3.87	1.25	MA	3.32	1.19	MA
4.	Provision of proper environmental controls	2.95	1.30	MA	3.03	1.16	MA
5.	Utilization of permit to work	3.43	1.37	MA	2.85	1.21	MA
6.	Provision of equipment for protection e.g. Guard rails	3.68	1.24	MA	2.47	1.34	MA
7.	Provision of access- aisle and clear storage area	3.46	1.28	MA	3.32	1.28	MA
8.	Utilization of policy and standards	3.37	1.23	MA	2.61	1.26	MA
9.	Authorization and proper coordination of works	3.98	1.34	MA	2.70	1.05	MA
10.	Provision of emergency preparedness	3.47	1.26	MA	3.26	1.31	MA
	Cluster Mean	**3.47**	**1.29**	**MA**	**2.97**	**1.22**	**MA**
	Grand Mean and Standard Deviation	**3.07**	**1.26**	**MA**	**3.03**	**1.25**	**MA**

Note: Strongly Agreed (SA=3.50-4.00), Moderately Agreed (MA=2.50-3.49)

The analyzed data in Table 2 shows the response of building construction contractors on Building construction industries compliance with International Labour Organisation, Occupational Safety and Health Management System (ILO-OSHMS) in Rivers State and Akwa Ibom State, Nigeria. The result revealed mean score of 3.07, 3.03 and Standard deviation of 1.26, 1.25 which implies that the building construction industries moderately complied with International Labour Organization, Occupational Safety and Health Management System (ILO-OSHMS) in Rivers State and Akwa Ibom State, Nigeria.

Research Question 2: What are the challenges facing Building construction industries compliance with International Labour Organisation, Occupational Safety and Health Management System (ILO-OSHMS) in Rivers State and Akwa Ibom State, Nigeria?

Table 3: *The challenges facing Building construction industries compliance with International Labour Organisation, Occupational Safety and Health Management System (ILO-OSHMS) in Rivers State and Akwa Ibom State, Nigeria.*

S/No.	Challenges Facing Building Construction Industries	Rivers State			Akwa Ibom State		
		Mean	SD	DEC	Mean	SD	DEC
A.	**Policy Generation**						
1.	Inadequate consultation	3.53	1.99	SA	3.51	1.09	SA
2.	Inadequate control of Hazard	3.59	1.87	SA	3.56	0.85	SA
3.	Inadequate allocation of Finance for Health and Safety	3.66	1.98	SA	3.57	0.94	SA
4.	Inadequate accident, Health and Incident Report	3.59	1.89	SA	3.54	1.07	SA
5.	Inadequate communication	3.56	1.90	SA	3.53	0.92	SA
	Cluster Mean	**3.59**	**1.93**	**SA**	**3.54**	**0.97**	**SA**
B.	**OSHMS Organization**						
1.	Inadequate input by top Artisans in OSHMS organization	3.58	1.72	SA	3.51	0.89	SA
2.	Inadequate provision and maintenance of workplaces, machinery etc.	3.59	1.75	SA	3.54	0.96	SA
3.	Inadequate training of First Aid procedures and facilities	3.64	1.83	SA	3.58	0.85	SA
4.	Inadequate provision of insurance	3.76	1.78	SA	3.59	0.88	SA
5.	Inadequate provision of infrastructure and equipment	3.51	1.81	SA	3.56	0.97	SA
6.	Inadequate workers Handbook memos and Email as a means of OSH Communication	3.52	1.84	SA	3.53	0.88	SA
7.	Inadequate training on fire, emergency Procedure and PPE provisions, limitations and maintenance	3.64	1.81	SA	3.57	1.09	SA
8.	Inadequate toolbox utilization awareness as a means of OSH communication	3.68	1.84	SA	3.96	0.79	SA
9.	Inadequate training of workforce on OSHMS	3.59	1.82	SA	3.58	0.87	SA
10.	Inadequate provision of Technical Support	3.61	1.63	SA	3.55	1.18	SA
	Cluster Mean	**3.61**	**1.78**	**SA**	**3.60**	**0.94**	**SA**
C.	**Planning and Implementation**						
1.	Inadequate emergency procedures been put in place to control likely incidents	3.52	1.68	SA	3.72	0.95	SA
2.	Inadequate provision of suitable and sufficient emergency rescue arrangement	3.59	1.64	SA	3.56	1.07	SA
3.	Inadequate provision of training for high-risk task	3.55	1.67	SA	3.64	0.77	SA
4.	Inadequate safety policy for working in confined spaces	3.56	1.71	SA	3.60	0.96	SA
5.	Inadequate performance of frequent risk analysis	3.57	1.59	SA	3.64	0.74	SA
6.	Inadequate provision of equipment for safe access and exit	3.58	1.65	SA	3.83	0.86	SA
7.	Inadequate risk to health and safety due to chemicals, physical and biological substances	3.59	1.77	SA	3.57	0.91	SA
8.	Inadequate provision of respiratory equipment and other PPE while working in confined spaces	3.59	1.75	SA	3.51	1.09	SA
9.	Inadequate provision of efficient workplaces, equipment and processes	3.56	1.68	SA	3.72	0.97	SA
10.	Inadequate testing of the atmosphere while working in confined spaces	3.53	1.69	SA	3.56	1.09	SA
	Cluster Mean	**3.56**	**1.68**	**SA**	**3.64**	**0.94**	**SA**
D.	**Measurement, Audit and Review**						
1.	Inadequate emergency procedures been put in place to control likely incidents	3.79	0.87	SA	3.57	1.02	SA
2.	Inadequate provision of suitable and sufficient emergency rescue arrangement	3.67	0.82	SA	3.51	0.93	SA
3.	Inadequate provision of training for high-risk task	3.59	1.09	SA	3.59	0.94	SA
4.	Inadequate safety policy for working in confined spaces	3.62	0.97	SA	3.52	1.07	SA
5.	Adequate awareness, knowledge, skill and competence of OSHMS	3.69	1.36	SA	3.54	1.24	SA

	Cluster Mean	**3.67**	**1.02**	**SA**	**3.55**	**1.04**	**SA**
E.	**OSHMS Control Factors**						
1.	Inadequate issuance of correct PPE for the task	3.66	0.76	SA	3.52	1.04	SA
2.	Inadequate accident investigation and analysis	3.52	0.82	SA	3.52	0.90	SA
3.	Inadequate procedures in the issue, use and maintenance of PPE	3.52	1.09	SA	3.50	0.85	SA
4.	Inadequate provision of proper environmental controls	3.57	0.94	SA	3.54	1.14	SA
5.	Inadequate utilization of permit to work	3.68	0.86	SA	3.58	0.87	SA
6.	Inadequate provision of equipment for protection e.g. Guard rails	3.52	0.79	SA	3.78	0.99	SA
7.	Inadequate provision of access- aisle and clear storage area	3.69	1.05	SA	3.98	1.06	SA
8.	Inadequate use of policy and standards	3.57	0.92	SA	3.62	0.79	SA
9.	Inadequate authorization and proper coordination of works	3.54	0.95	SA	3.56	1.14	SA
10.	Inadequate emergency preparedness	3.67	0.91	SA	3.51	0.93	SA
	Cluster Mean	**3.59**	**0.91**	**SA**	**3.61**	**0.97**	**SA**
	Grand Mean and Standard Deviation	**3.60**	**1.46**	**SA**	**3.59**	**0.97**	**SA**

Note: Strongly Agreed (SA=3.50-4.00), Moderately Agreed (MA=2.50-3.49)

The analyzed data in Table 3 shows the response of building construction contractors on the challenges facing Building construction industries compliance with International Labour Organisation, Occupational Safety and Health Management System (ILO-OSHMS) in Rivers State and Akwa Ibom State, Nigeria. The result revealed mean score of 3.60, 3.59 and Standard deviation of 1.46, 0.97 which implies that the building construction contractors strongly agreed that inadequate OSHMS control factors compliance; inadequate planning and implementation; inadequate measurement, audit and review are the challenges facing building construction industries compliance with International Labour Organisation, Occupational Safety and Health Management System (ILO-OSHMS) in Rivers State and Akwa Ibom State, Nigeria.

Hypothesis 1: There is no significant difference in the mean response of building construction contractors' compliance with International Labour Organisation, Occupational Safety and Health Management System (ILO-OSHMS) in Rivers State and Akwa Ibom State, Nigeria.

Table 4: *Independent t-test analysis on the building construction industries compliance with International Labour Organisation, Occupational Safety and Health Management System (ILO-OSHMS) in Rivers State and Akwa Ibom State, Nigeria*

Variable	N	$\overline{X}$	SD	df	t-cal.	t-crit.	Dec.
Rivers State	66	3.07	1.26				
				124	1.38	1.67	NS
Akwa Ibom State	60	3.03	1.25				

Note NS = Not Significant.

The analyzed data in Table 4 shows that the t-cal was 1.38 while the t-crit. was 1.67 hence, since the t-cal at 124 degree of freedom is less than t-crit. thus the null hypothesis of no significant difference between the mean responses of building construction contractors on Building construction industries compliance with International Labour Organisation, Occupational Safety and Health Management System (ILO-OSHMS) in Rivers State and Akwa Ibom State was upheld. This implies that the building construction industries lowly complied with International Labour Organisation, Occupational Safety and Health Management System (ILO-OSHMS) in Rivers State and Akwa Ibom State, Nigeria.

Hypothesis 2: There is no significant difference in the mean response of building construction contractors on the challenges facing Building construction industries compliance with International Labour Organisation, Occupational Safety and Health Management System (ILO-OSHMS) in Rivers State and Akwa Ibom State, Nigeria.

Table 5: *Independent t-test analysis of building construction contractors on the challenges facing Building construction industries compliance with International Labour Organisation, Occupational Safety and Health Management System (ILO-OSHMS) in Rivers State and Akwa Ibom State, Nigeria*

Variable	N	$\overline{X}$	SD	df	t-cal.	t-crit.	Dec.
Rivers State	66	3.60	1.46				
				124	1.24	1.67	NS
Akwa Ibom State	60	3.59	0.97				

Note NS = Not Significant.

The analyzed data in Table 5 shows that the t-cal was 1.24 while the t-crit. was 1.67 hence, since the t-cal at 124 degree of freedom is less than t-crit. thus the null hypothesis of no significant difference between the mean responses of building construction contractors on the elements of International Labour Organization (ILO) Occupational Safety and Health Management Systems (OSHMS) Organization was upheld. This implies that the building construction contractors strongly agreed that all the items are challenges facing Building construction industries compliance with International Labour Organisation, Occupational Safety and Health Management System (ILO-OSHMS) in Rivers State and Akwa Ibom State, Nigeria.

Discussion of Findings

Results of the data analysis presented in Table 2 shows the response of building construction contractors on Building construction industries compliance with International Labour Organisation, Occupational Safety and Health Management System (ILO-OSHMS) in Rivers State and Akwa Ibom State, Nigeria. The result revealed that the building construction industries moderately complied with International Labour Organization, Occupational Safety and Health Management System (ILO-OSHMS) in Rivers State and Akwa Ibom State, Nigeria. The findings agree with the study of Ligarde and Thalange and (2013) Umar (2018) who noted that building construction industries lowly complied with International Labour Organization, Occupational Safety and Health Management System (ILO-OSHMS).

From results of the data analysis presented in Table 3 shows the response of building construction contractors on the challenges facing Building construction industries compliance with International Labour Organisation, Occupational Safety and Health Management System (ILO-OSHMS) in Rivers State and Akwa Ibom State, Nigeria. The result revealed that the building construction contractors strongly agreed that inadequate OSHMS control factors compliance; inadequate planning and implementation; inadequate measurement, audit and review are the challenges facing building construction industries compliance with International Labour Organisation, Occupational Safety and Health Management System (ILO-OSHMS) in Rivers State and Akwa Ibom State, Nigeria. The findings agree with the study of Umar (2018) who noted that all the items are challenges facing building construction industries compliance with International Labour Organisation, Occupational Safety and Health Management System (ILO-OSHMS).

From results of the data analysis presented in Table 4, the building construction industries moderately complied with International Labour Organisation, Occupational Safety and Health Management System (ILO-OSHMS) in Rivers State and Akwa Ibom State, Nigeria. The findings agree with the study of Umar (2018) who reported no significant difference between the mean responses of contractors on building construction industries compliance with International Labour Organisation, Occupational Safety and Health Management System (ILO-OSHMS). In the same vein, results of the data analysis presented in Table 5, the building construction contractors moderately agreed that all the items are challenges facing Building construction industries compliance with International Labour Organisation, Occupational Safety and Health Management System (ILO-OSHMS) in Rivers State and Akwa Ibom State, Nigeria. The findings agree with the study of Umar (2018) who reported no significant difference between the mean responses of contractors on the challenges facing Building construction industries compliance with OSHMS.

Conclusion

The study assessed Health and Safety practices of building construction industries in Rivers State and Akwa Ibom State of South-South geopolitical zone in Nigeria. The objectives of the study was to determine the elements of International Labour Organization; Occupational Safety and Health Management Systems (ILO-OSHMS), level of compliance by building construction industries and challenges faced by construction industries in the study area. The researchers concluded that inadequate OSHMS control factors compliance; inadequate planning and implementation; inadequate measurement, audit and review are the challenges facing building construction industries compliance to ILO-OSHMS. This could be as a result of the availability and effectiveness of monitoring agencies in the study area. Building construction industries should prioritize compliance to ILO-OSHMS to minimize the number of work-related incidents in building construction industries in South-South Geopolitical Zone, Nigeria.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. Construction firms should supplement health and safety training with manuals that are easy to navigate and not too challenging to workers.
2. Construction firms should employ qualified safety managers to ensure learning of safety knowledge by workers during safety training.
3. Construction firms should set up an organizational structure that supports training transfer and encourage middle management to provide adequate opportunity to workers to apply learned concepts in practice.

Declarations

Availability of data and materials

This is a review paper and all data has been presented throughout the paper.

Competing interests

The authors have no competing interest to declare.

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