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EVALUATION OF HEALTH AND SAFETY COMPLIANCE OF CONSTRUCTION PROJECTS IN SOUTH EAST NIGERIA

Chidinma Amarachukwu Emma-Ochu[1], Kevin C. Okolie[2] and Ikem Mbamali[3]
[1]Department of Architecture, Federal Polytechnic Nekede, Owerri, Imo State. Nigeria
[2]Department of Building, Nnamdi Azikiwe University, Awka, Anambra State. Nigeria
[3]Department of Building, Ahmadu Bello University Zaria, Kaduna State, Nigeria

This research is about the evaluation of the level of construction projects compliance to health and safety regulations (South East Nigeria) with a view to identifying action plans for enhancing the compliance in South East Nigeria. This study which is essentially survey based and empirical, where quantitative data and qualitative data was derived from responses generated by the questionnaire survey and field work. The questionnaires were administered to indigenous construction firms and professionals in the construction industry in Abia, Anambra, Imo, Enugu and Ebonyi States of the South East area of Nigeria which are the study population. The tools used for data analysis were Regression using Friedman Q Test Ranking, cross tab, while descriptive statistics used for analyzing others include bar charts, pie charts, tables, chi square, and ranking analysis. All hypotheses were tested at 5% level of significance. The findings revealed that there is association in level of compliance in construction projects to existing Health and Safety (H&S) regulations in South East Nigeria. The study further reveals that the challenges affecting health and safety compliance in South East Nigeria are bribery and corruption, ignorance of the benefits of compliance, lack of health and safety culture, perception of stakeholders, neglect of human rights and moral values, non-commitment of the major construction players, inadequate training of staff and lack of skilled health and safety personnel, non-inclusion of health and safety in contract document & tendering process and inadequate funding. The research also found out that there is significant relationship between health/safety regulations and enforcement of health and safety measures in South East Nigeria and that there is significant positive relationship between health/safety regulations and Action plan for enhancing health safety measures in South East Nigeria. It therefore concludes that effective health and safety practices and planning for construction projects in South East Nigeria are yet to be fully appreciated and implemented among construction firms. This study observes that the lack of awareness and understanding of H&S significantly hinders H&S. The study recommended that to ensure high level of compliance in all the states, allocating H&S responsibilities, which are bound by local laws, will significantly contribute to improving H&S and there should be workable and mandatory H&S consultants for every project. Also the stakeholders in the construction industry (e.g. clients and professionals) should team up to provide enforceable Health and Safety practices and plans that are in sync with health/safety regulations in the Nigerian construction industry and the world at large.

Keywords: construction, construction projects, health, health and safety, safety compliance, safety

[1] chidinmaeochu@gmail.com
[2] Kc.Okolie@unizik.edu.ng
[3] mbamalikem@yahoo.com

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INTRODUCTION

The development of sustainable health and safety environments is becoming one of the key issues globally. The issue of health and safety standards especially in the construction industry in Nigeria has been a source of concern to many authors. It is the view of Umeokafor, Umeadi, Jones & Igwegbe (2014), that in Nigeria, the industry is not covered by any local health and safety (H&S) law, consequently some contractors in Nigeria adopt H&S standards from developed countries and the National Building Code of 2006 which is yet to receive legislative backings.

Okoye, Ezeokonkwo & Ezeokoli (2016) posited that the enforcement of safety regulation is not widespread within the industry. As a result, construction workers are killed or injured and suffer ill health than in any other industry. Dodo (2014), stated that the first effort to regulate and control health and safety of work in Nigeria was the factory Act of 1958 but unfortunately there is lack of provision for enforcement of health and safety standard in the construction industry. Health and Safety on Construction sites is imperative to provide safe working conditions to construction workers due to intrinsic hazards and risks associated with every work situation (Olutuase, 2014). Nigeria adopted the OSH regulatory framework of US & UK which is supposed to be enforced by the Federal Ministry of Labour and Productivity. The OSH regulations have to be encompassing, comprehensive and enforceable for it to be effective and functional. The National Policy on Occupational Safety and Health which has great goals and objectives of creating a general framework for the improvement of working conditions and the working environment, prevent accidents, ensure the provision of occupational safety and health services to workers in all sectors of economic activity has not been able to achieve these great goals and objectives due to many factors. The appraisal and identification of the factors are the focus of this work.

Significance and motivation

This study will evaluate the level of construction projects compliance to health and safety regulations in South East Nigeria with a view to identifying action plans for enhancing the compliance by determining the level of compliance of construction projects to existing health and safety regulations in South East Nigeria, identifying health and safety compliance challenges of construction projects in South East Nigeria and examining the relationship between enforcement of health and safety measures and health and safety regulations, action plans for enhancing health and safety measures and health and safety regulations in construction sites of South East Nigeria.

This study provides a synopsis of previous construction safety research in Nigeria in order to highlight the current state of the industry and direct future research.

The level of compliance of construction projects to existing health and safety regulations in the South East states of Nigeria can be checked from what is applicable at the Federal since the factories Act F1 LFN 2004 empowers the Federal Ministry of Labour and employment (Inspectorate Division)(LPID) to oversee H&S including enforcement. The state controllers 'maintain contact with headquarters office in Abuja. The level of compliance to existing health and safety regulations in the South East states is low due to lack of proper enforcement by existing authority.

The study done by Okoye et al. (2016), on Nigeria construction sites and Anambra State in particular, examined and found out that the level of health and safety knowledge among construction workers in Anambra State was moderate, the level of health and safety compliance, in the state among the workers was low, the study further established a very weak positive correlation between the health and safety knowledge and compliance of construction workers. It further averred that health and safety knowledge and compliance alone are not enough to cause behavioral changes but safety factors like enforceable regulatory framework, management commitment etc. Despite the tremendous infrastructural development both in building projects and road construction going on in the five states in the South East of Nigeria (Abia, Anambra, Imo, Enugu, and Ebonyi), most of these projects are handled by indigenous contractors and there have been cases of construction sites accidents which are not reported. According to Okoye et al. (2016), the increasing level of building collapse together with the government renewed effort in ensuring its minimization through institution of various monitoring and compliance teams have raised the awareness level of safety issues in construction sites in the South East but the construction workers compliance to these health and safety regulations are still low. There is therefore the need for construction organizations in the South East to improve their health and safety knowledge, compliance and project performance. Given these highlighted deficiencies, it is pertinent to further examine the challenges affecting the compliance of H&S regulations in Nigeria. Umeokafor (2017) opines that the Nigerian construction industry like other industries faces challenges which are not limited to: lack of skilled manpower, unstable prices of materials, poor implementation of policies, political instability, corruption, unethical practices but corruption is the major hindrance to the construction industry.

According to Omobolanle & John (2017), Nigeria, the largest African country is beleaguered with bribery and corruption, and Transparency International (2012) ranks the country 139 out of 176 in terms of the corruption perception index. Rantanen (2005), Ezenwa (2001), Cheung et al. (2004), Diugwu et al. (2012), Windapo, 2013,Idubor and Osiamoje (2013)identified ignorance of the benefits of compliance, lack of health and safety culture, perception of stakeholders, neglect of human rights and moral values, non-commitment of the major construction players, inadequate training of staff and lack of skilled health and safety personnel, non-inclusion of health and safety in contract document & tendering process and inadequate funding as challenges affecting the compliance of H&S regulations in Nigeria amongst others.

In Nigeria, there are legislations and guidelines on health and safety but employers do not comply with basic legislations to protect people at work. Barker in Ngwama 2016 observed that deregulation; subcontracting and informal contractual conditions make this situation even worse. Workers often have no choice – either they take a dirty and dangerous job, or they will have no job at all. Thankfully, the new Bill (The Labour, Safety, Health and Welfare Bill of 2012) addresses all the above issues, as it includes the construction industry in the definition of its premises and stipulates severe penalties for violation. This bill covers both the formal and informal industrial sectors in Nigeria. It seeks to repeal the Factories Act and serve as a comprehensive OSH legislation for the workplace.

METHODOLOGY

This paper evaluates the level of construction projects compliance to health and safety regulations in South East Nigeria with a view to identifying action plans for enhancing the compliance. The research sample was drawn from registered professionals in study area (South East area of Nigeria) and indigenous construction firms as shown in Table 1 and Table 2 and structured questionnaires were administered to them. South East of Nigeria is one of the six geopolitical zones in the country. The region consists of the following states; Abia, Anambra, Imo, Enugu and Ebonyi. The data for the study were collected from Umuahia in Abia, Awka in Anambra, Owerri in Imo, Enugu in Enugu, and Abakiliki in Ebonyi. The questionnaires were distributed to 1400 respondents in the five (5) states in the South East of Nigeria that are knowledgeable and willing to participate but 1300 were retrieved but only One thousand one hundred and ninety (1190) copies were validated for analysis. (See Figure 1). Descriptive analysis was applied on categorical variables such as State, gender, designation of respondent and experience. Ordinary Least Squares Regression Model was used to depict significant predictors of Enforcement of Health and Safety Regulations (ENF) and Action Plans for Enhancing Health and Safety Compliance (APH). Statistics were summarized in tables and charts. Statistics were discussed at the 95% CL (Alpha=0.05) and presented using statistical tables and charts.

FINDINGS AND DISCUSSION

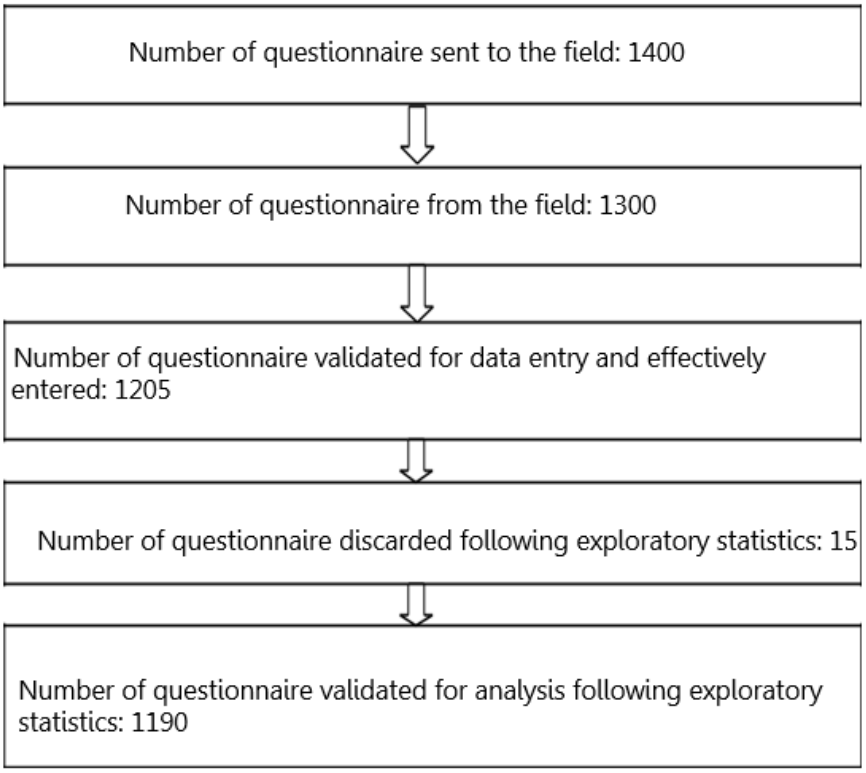


Figure 1: Sample flow chart

Table 1: Registered professionals in study area

S/N	STATE	ARCHITECTS	BUILDERS	ENGINEERS	TOTAL
1	Abia (Umuahia)	25	20	30	75
2	Anambra (Awka)	35	40	45	120
3	Imo (Owerri)	70	30	250	350
4	Enugu (Enugu)	150	50	180	380
5	Ebonyi(Abakiliki)	20	52	80	152
	Total	300	192	585	1077

Source: Secretariat of various professional bodies (NIA-Nigerian Institute of Architects, NIOB-Nigerian Institute of Builders, NSE-Nigerian Society of Engineers, NITP-Nigerian Institute of Town Planners) 2020

Table 2: Indigenous contractors

S/N	STATE	CONTRACTORS
1	Abia (Umuahia)	20
2	Anambra (Awka)	70
3	Imo (Owerri)	60
4	Enugu (Enugu)	80
5	Ebonyi(Abakiliki)	30
	Total	260

Source: Secretariat of various professional bodies (NIA-Nigerian Institute of Architects, NIOB-Nigerian Institute of Builders, NSE-Nigerian Society of Engineers, NITP-Nigerian Institute of Town Planners) 2020

Table 3: States sampled for the study

	STATE	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	ABIA	124	10.4	10.4	10.4
	ANAMBRA	272	22.9	22.9	33.3
	IMO	420	35.3	35.3	68.6
	ENUGU	280	23.5	23.5	92.1
	EBONYI	94	7.9	7.9	100.0
	Total	1190	100.0	100.0	

Source: Survey Questionnaire of the Study, 2020

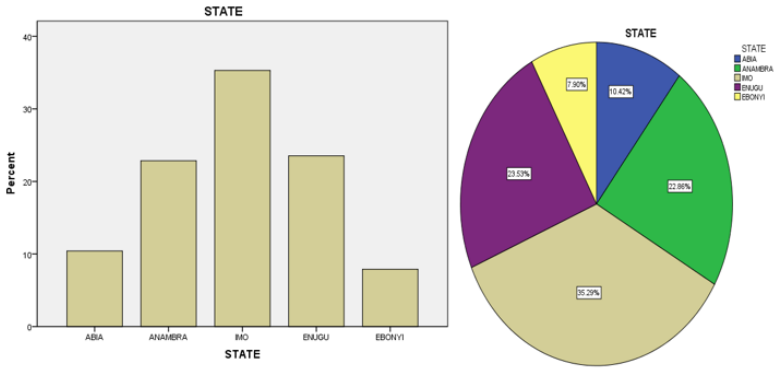


Figure 2: Bar chat and pie chart of sampled States for the study.
Source: Survey Questionnaire of the Study extracted from SPSS output, 2020

Each of the five States of our sample was allotted questionnaires; however the following returns were made (Table 3 and Fig.2): Abia with 124 participants making a proportion of 10.4%, Anambra having a proportion of 272 (22.9%), Imo 420 (35.3%), Enugu 280 (23.5%) and Ebonyi 94 (7.9%). The implication here is that Imo State has the highest number of participant while Ebonyi State has the lowest number of participants.

Table 4: Gender sampled for the study

Gender		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	MALE	926	77.8	77.8	77.8
	FEMALE	264	22.2	22.2	100.0
	Total	1190	100.0	100.0	

Source: Survey Questionnaire of the Study, 2020

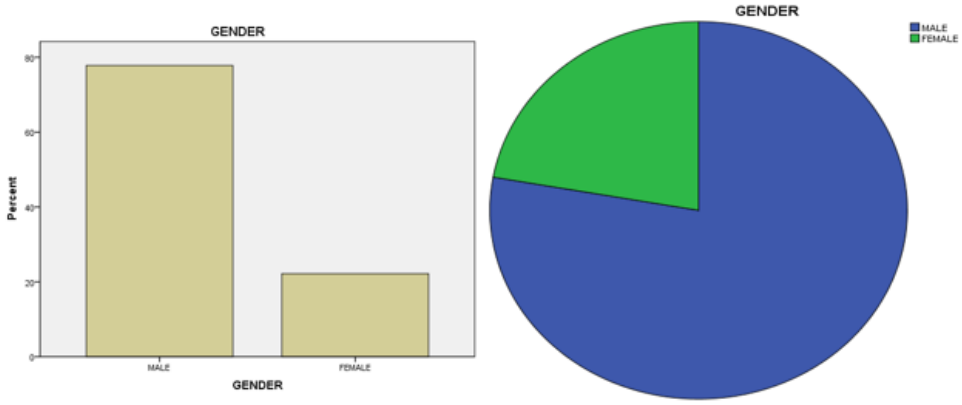


Figure 3: Bar chat and pie chart of sampled gender for the study.
Source: Survey Questionnaire of the Study extracted from SPSS output, 2020

From Table 4 and Figure 3, participants were essentially male with a proportion of 926 (77.8%) as against 264 (22.2%) of the female. it is evidently clear that males dominate the Construction sector of the Nigerian economy.

Table 5: Designation of respondent sampled for the study

DESIGNATION	Frequency	Percent	Valid Percent	Cumulative Percent
ARCHITECT	343	28.8	28.8	28.8
BUILDER	168	14.1	14.1	42.9
ENGINEER	163	13.7	13.7	56.6
QUANTITY SURV	212	17.8	17.8	74.5
ESTATE VALUER	124	10.4	10.4	84.9
URBAN REG P	44	3.7	3.7	88.6
CONTRACTORS	136	11.4	11.4	100.0
Total	1190	100.0	100.0	

Source: Survey Questionnaire of the Study, 2020

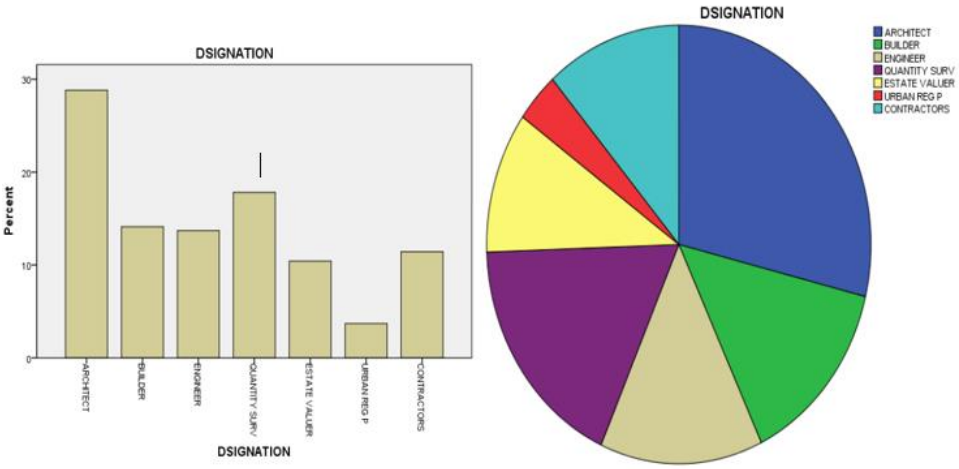


Figure 4: Bar chat and pie chart of sampled designation for the study.
Source: Survey Questionnaire of the Study extracted from SPSS output, 2020

In these five Sates, Architects are 343 participants making a proportion of 28.8%, Builders have a proportion of 168 (14.1%), Engineers 163 (13.7%), Quantity Surveyor 212 (17.8%), Estate Valuers 124 (10.4%), Urban and Regional Planners 44 (3.7%) and Contractors 136 (11.4%). The implication is that Architects have the highest number of participants while Urban and Regional Planners have the lowest number of participants, across States. (Table 5 and Figure 4).

Table 6: Experience in years of respondent sampled for the study

EXPERIENCE	Frequency	Percent	Valid Percent	Cumulative Percent
Valid BTW 1&5YRS	503	42.3	42.3	42.3
BTW 6&10YRS	269	22.6	22.6	64.9
BTW 11 &15YRS	259	21.8	21.8	86.6
ABOV 16YRS	159	13.4	13.4	100.0
Total	1190	100.0	100.0	

Source: Survey Questionnaire of the Study, 2020

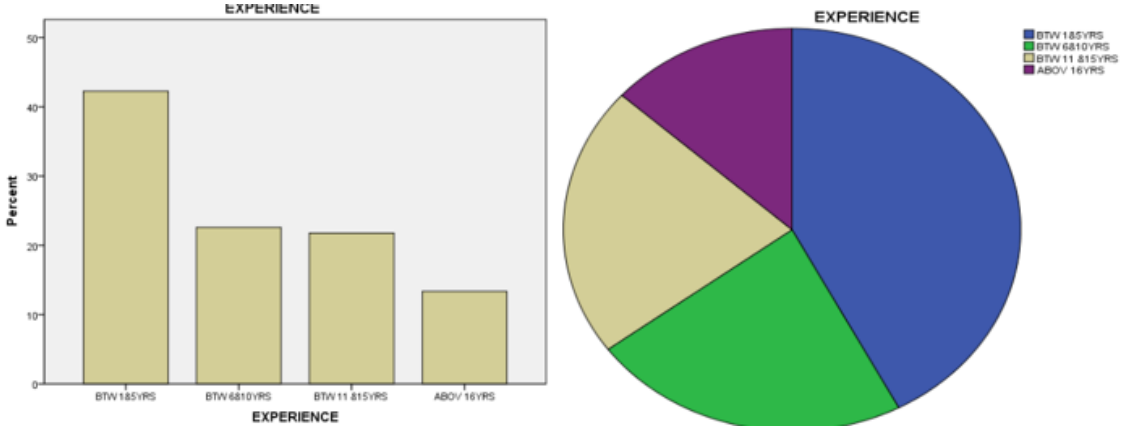


Figure 5: Bar chat and pie chart of sampled designation for the study.
Source: Survey Questionnaire of the Study extracted from SPSS output, 2020

Cursory examination of table 6 and figure 5 reveals that those with years of experience between 1- 5 years are 503 making a proportion of 42.3%, 6-10 years have a proportion of 269 (22.6%), 11-15 years 259 (21.8%) and above 16 years 159 (13.4%). The implication is that cumulatively those with experience between one year and fifteen years occupy 86.6% of how long in Practice.

Table 7: Friedman Q test ranking challenges to health and safety compliance in South East, Nigeria.

ITEMS	MEAN RANK
NON-INCLUSION OF H&S IN CONTRACT DOCUMENT & TENDERING PROCESS (9)	4.92
Non commitment of the major construction players (6)	5.33
INADEQUATE FUNDING (10)	4.86
INADEQUATE TRAINING OF STAFF (7)	5.28
LACK OF H&S CULTURE (3)	5.73
PERCEPTION OF STAKEHOLDERS (E.G. CLIENTS AND PROFESSIONALS) (4)	5.59
LACK OF SKILLED H&S PERSONNEL (8)	5.17
NEGLECT OF HUMAN RIGHTS AND MORAL VALUES (5)	5.44
BRIBERY AND CORRUPTION (1)	6.53
IGNORANCE OF THE BENEFITS OF COMPLIANCE (2)	6.15

Source: SPSS Output of the Study, 2020

Test Statistics[a]	
N	1190
Chi-Square	372.576
df	9
Asymp. Sig.	.000

a. Friedman Test
Source: SPSS Output of the Study, 2020

An SPSS Version 19 template was used to analyze the data gotten from respondents. From Table 7 above this ranked the Challenges to Health and Safety Compliance in South East, Nigeria. Bribery and corruption (with mean rank of 6.53) happens to be the highest challenge to Health and Safety Compliance. This is closely followed by Ignorance of the benefits of compliance, Lack of Health and Safety culture , Perception of stakeholders, Neglect of human rights and moral values , Non commitment of the major construction players, Inadequate training of staff and Lack of skilled Health and Safety personnel with mean ranks of 6.15, 5.73,5.59 ,5.44,5.33,5.28 and 5.17 respectively. It is also evident that Inadequate funding and Non-inclusion of Health and Safety in contract document & tendering process with mean ranks of 4.86 and 4.92 were the least constraint to Health and Safety Compliance in South East, Nigeria. Thus, bribery and corruption are the worst challenge while inadequate funding is the least of the challenges amongst professionals and stakeholders in the construction sub- sector.

The second panel of table 7 shows the various statistics with respect to Friedman's Q test. The Chi-Square (more correctly referred to as Friedman's Q) is our test statistic. It basically summarizes how differently the Challenges to Health and Safety Compliance were rated in a single number. The df are the degrees of freedom associated with our test statistic. It's equal to the number of variables we compared - 1. In our example, 10 variables - 1 = 9 degrees of freedom. The Asymp.

Sig. is an approximate p-value. Since p (.0000) < 0.05, we reject the null hypothesis of equal population distributions amongst the variables.

Table 8: Chi-square cross tabulation of result and the compliance variables

Variable	Chi-Square	P-Value	Level of Sig.	Remarks
HSP- HEALTH & SAFETY POLICY	60.781	0.000	Significant	Reject HO
HSA-HEALTH &SAFETY ADVISER	176.614	0.000	Significant	Reject HO
HST- HEALTH & SAFETY TRAINING	35.461	0.000	Significant	Reject HO
ALE-APPROPRIATE LIFTING EQUIPMENT	39.808	0.000	Significant	Reject HO
PPE-PERSONAL PROTECTIVE EQUIPMENT	177.987	0.000	Significant	Reject HO
FAF-FIRST AID FACILITIES	101.614	0.000	Significant	Reject HO
WSS-WARNING SIGNS AND SYMBOLS	82.213	0.000	Significant	Reject HO
RID-ROUTINE SAFETY INSPECTION &DRILLS	122.740	0.000	Significant	Reject HO
SWM-SAFE WORK METHODS	13.093	0.000	Significant	Reject HO
PTW-PERMIT TO WORK	84.564	0.000	Significant	Reject HO
AAO-ACQUAINTANCE &ADHERENCE TO OCCUPATIONAL SAFETY &HEALTH ACT	54.996	0.000	Significant	Reject HO

Source: Extracted from Cross Tabulation of State on Measures to Enhance Health and Safety Compliance SPSS Output of the Study, 2020

Table 8 above helps to ascertain the level of relationship existing between compliance level to health and safety regulations by construction firms in South East, Nigeria. Crosstabs and Chi-Square are powerful ways to analyze survey data with respect to association and relationships.

Thus table 8 showed all the variables used in measuring compliance level. It compared the P-value to the level significance. Usually, a significance level (denoted as α) of 0.05 is the rule of thumb. A significance level of 0.05 indicates a 5% risk concluding that an association between the variables exists when there is no actual association. Consequently in all the results of table 8 above, the P-values are 0.000. Since the P-values are less than (0.05) we conclude that all the measures of compliance level are associated with each other in South East Nigeria.

CONCLUSION

The findings of this paper are as follows:

1. There is association in level of compliance in construction projects to existing Health and Safety regulations in South East Nigeria. This agrees with the findings of Umeokafor (2017) that there is a relationship between self-regulation and compliance with the law. This is because, firstly, enforced self-regulation can be a statutory requirement hence the need to comply with the law. Secondly, the concept of self-regulation including co-regulation is aimed at working with the regulated to develop, administer and control activities to achieve a desired established system -compliance.

2. The different Challenges to Health and Safety Compliance in South East Nigeria were identified as bribery and corruption (with mean rank of 6.53) happens to be the highest challenge to Health and Safety Compliance. This is followed by Ignorance of the benefits of compliance, Lack of Health and Safety culture , Perception of stakeholders, Neglect of human rights and moral values, Non commitment of the major construction players, Inadequate training of staff and Lack of skilled Health and Safety personnel, Non-inclusion of Health and Safety in contract document & tendering process and Inadequate funding. Thus inadequate funding is the least constraint while bribery and corruption is the greatest challenge to Health and Safety Compliance in South East, Nigeria. This corroborates Umeokafor (2017) findings that the factors influencing the self-regulation of construction H&S in Nigeria are categorized as primary or direct factors and secondary or indirect factors. The secondary factors are from the institutional, social, political and cultural environments. They include money, culture, insecurity, inadequate H&S policies, and multiple actors in H&S regulation, cultural institutions, political influence, social status and lack of governmental attention. He further posits that lots of Nigerians are living on below one dollar a day and unemployment level is high. The foregoing are reflected in the construction industry, as a lot in the industry are unskilled, walking straight from the streets to the industry; earning a living is their priority not H&S.

3. The research found out that there is significant relationship between health/safety regulations and enforcement of health and safety measures in South East Nigeria. Idoro (2011) also agrees that there is the need for effective risk management and regulation and control of OHS in the Nigerian construction industry.

4. There is significant positive relationship between health/safety regulations and Action plan for enhancing health safety measures in South East Nigeria. This corroborates the findings of Omobolanle and John (2017) that to promote an H&S culture that would provide continuous H&S performance improvement on construction projects, H&S legislation has to be specific, strictly monitored, and enforced.

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