Chapter

Approaches to Improving Occupational Health and Safety of the Nigerian Construction Industry

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Abstract

The alarming figures of occupational accidents in the Nigerian construction industry, which accounted for 39.24% of the fatal accidents between 2014 and 2014, called for the subject matter. Therefore, occupational accidents mentioned earlier prompted this study on the way forward toward the approaches to improving occupational health and safety as well as the prevention of occupational accidents in the Nigerian construction industry. The quantitative method was adopted for this study. The result-revealed approaches to improving occupational health and safety are as follows: the Establishment of the Nigerian Construction Industry Development Board (NCIDB), technical assistance and collaboration among construction professionals, skill development in the management and communication of occupational health and safety, awareness-raising and advocacy on occupational health and safety, Use of International Labour Organization (ILO) mechanism on occupational health and safety, international collaboration with other professional bodies on health and safety, proper monitoring and recording of all injuries, and adequate allocation of resources (human, financial, and technology) on Occupational Health and Safety. The study called for better participation of all stakeholders in the construction industry toward improving occupational health and safety in the workplace and ensuring necessary measures in the prevention of occupational accidents.

Keywords: accidents, construction, hazard, health, occupation, safety

1. Introduction

Over the years, the focus on occupational health and safety matters has substantially increased in many nations, particularly in developed countries. Such improvement could be ascribed to numerous factors such as new methods of technical management and standards put in place by these countries. In developing countries, no such adequate provisions have been taken to moderate accidents on construction sites [1]. Nevertheless, all sectors of the economy are connected with potential exposure to risks and hazards of injuries and illnesses [2]. Health and safety appear so easy to

pronounce—just make sure individuals do not get hurt, in practice, it is difficult to accomplish health and safety in an organization. Improving occupational health and safety is a major matter across the construction industry globally [3]. Occupational accidents are sources of concern to employees, organizations, and regulatory agencies because the relationship between accidents and injury or death can be easily recognized. It is principally for this purpose that many discussions on safety and health issues are focused. The construction industry is a significant section of the economy in many nations but it is mostly labeled to be the most hazardous. Fatality and death frequency in the construction sector globally may show intrinsically poor health and safety management norms. According to Rowlinson [4], even with decades of research that has been trying to solve the problems of its failure, construction has been the poorest in terms of safety performance globally. The industry has been characterized by various issues around its division, resulting in conflicts, communication problems, and a lack of collaboration among the stakeholders. Among parts of the problems faced by the industry is from the clients with the absence of long-time view of controlling its properties and worsened by the bad organization on site and lack of appropriate complete design of temporary and permanent works. These problems affecting the sector are not only limited to safety but also include sustainability, productivity, and quality. The sector considers itself to be distinct and the issues faced by it are seen to be wicked in nature.

At the global level, the construction sector accounts for 30% of the entire fatality [5]. The construction sector is responsible for 20.6% of fatal accidents in the workplace encountered in the European Union (EU) [6], whereas it engaged only 10% of the working population [7]. The overview of fatalities in the United States of America (USA) revealed that 4339 employees lost their lives in the construction sector from 2011 to 2015 [8]. Similarly, employees in the United States of America's construction sector experienced 7% of entire private-sector injuries in 2017 [9]. With particular reference to the United States of America, the fatality rate in the construction sector in 2018 was 3.0 per 100,000 employees with 1008 fatal occupational injuries [10]. In Japan, the construction sector's occupational accident rate was 32.2% in 2020 [11]. The figure for fatal injuries in the UK construction sector was 39 in 2020/21, a reduction of 3 from the preceding year with a total figure of 42 [12]. In Australia, the three priority sectors, agriculture, construction, and road transport, accounted for 55% of employee fatalities between 2015 and 2019, with the construction sector accounting for 17% [13].

Furthermore, in terms of monetary value, according to Gibb et al. [14], an estimated sum of £848 M was spent yearly by the UK employers in the construction industry apart from expenditures borne by the individual and the society, while the Health Safety Executive 2019 (HSE 2019) [15] highlighted that a sum of £1.2 billion was spent in the construction industry for injuries and ill-health in 2017/2018. Occupational accidents in the construction industry cost Australia a sum of 2860 ($ million) between 2012 and 2013 [16]. Similarly, Geetha M. Waehrer et al. [17] in 2002 highlighted that the costs of occupational accidents in the United States of America were estimated at $11.5 billion, 15% of these costs were from the private sector, and in general, the cost per case of injury was $27,000, nearly twice the case per cost of $15,000 for the entire sector in 2002. The sum of $4,634,501,000 was the total estimated cost of construction fatalities in the USA from 2011 to 2015, as highlighted by Manzo [8].

Hazardous working conditions influence employees in different methods. High occupational accidents may create fear among employees who intend to be working in such organizations. Therefore, an organization needs to identify the potential risk before the commencement of any construction work. This can be accomplished by assigning competent workers to perform hazard identification and risk assessment. A

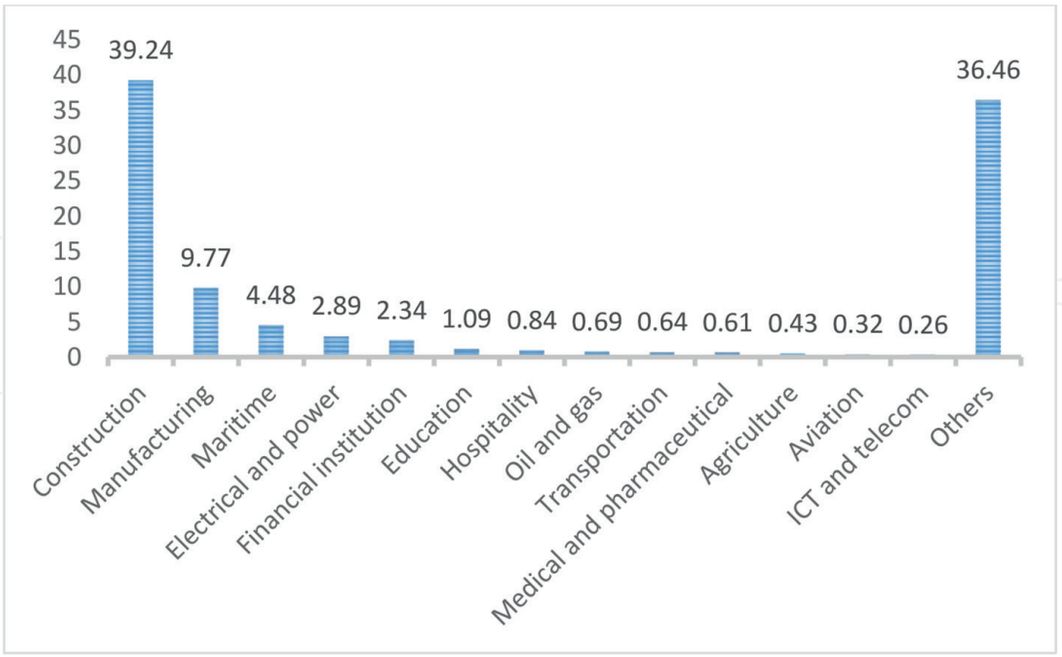

Figure 1.
Accident classification by industry (2014–2016).Source: Federal Ministry of Labour and Employment, Abuja, Nigeria.

vibrant method is required to be defined regarding how hazards are to be identified and monitored to ensure that construction sites are kept free from accidents and injury [18].

Nigerian construction industry is not exempted from the menace of occupational accidents. The construction sector accounted for the highest percentage of occupational accidents that occurred between 2014 and 2016 [19], as illustrated in **Figure 1**. The problems of occupational accidents require drastic steps. Therefore, this study aims to identify the approaches toward improving occupational health and safety in the Nigerian construction industry.

2. Literature review

Improving health and safety in the construction industry remains a priority because the construction sector stands out among all other sectors as the highest contributor to fatal occupational accidents. It was found that the traditional burden of ensuring the health and safety of construction worksites has been placed exclusively on the organizations. Although organizations will always bear the duty for construction site health and safety, the novel perception of prevention through design could be seen to allow Engineers, Architects, and other professionals to contribute to improving site health and safety, likewise the step for the prevention of occupational accidents. Similarly, the responsibility of frontline managers and senior-level leadership is to vigorously work together to reduce constraints on employee participation in the prevention of occupational accidents [20]. According to ILO 2013 [21], managing risks and identifying hazards are important steps to improving health and safety and health at the organizational level. Also, the provision of information and training courses to employees is a legal prerequisite for the prevention of occupational accidents. Managers must identify hazards faced by their employees, likewise employees must recognize the hazards they are exposed to.

According to the study by Bhattacharjee et al. [22], the tactics for improving health and safety in the construction industry include personnel selection, technological intervention, behavior modification, poster campaigns, quality circle, exercise and stress management, safety climate, near-miss accident reporting, and zero injury technique. Mollo et al. [23] highlighted that the process of improving OHS in the construction sector would be accomplished by utilizing learning by doing. According to Chan et al. [24], to guarantee health and safety, and to ensure the sector is more efficient, it is important to take into consideration learning from incidence factors in the construction industry that permits the development of active health and safety measures. Learning by doing permits site managers to transfer skills and knowledge to employees. The study by Osei-Asibey et al. [25] focused on the framework to enable construction participants to recognize problem areas on the construction site and implement the necessary improvement measures to build a healthy and safe construction site. Five expected improvements were identified, namely: (1) qualified participants, (2) positive behavior and attitude, (3) better working conditions and management's commitment, (4) suitable tools and equipment, and (5) better construction health and safety knowledge. According to Manzo [8], four policy approaches to ensure safer and healthy working conditions in the construction sectors are (1) increasing resources for conducting inspections, (2) sustaining or implementing state-acknowledged wage laws, (3) the introduction of responsible bidder ordinances, and (4) avoiding attacks on unions.

Furthermore, according to Kheni et al. [26], robust and well-structured institutional plans to ensure health and safety (H&S) standards in the workplace are required to improve occupational health and safety. The OHS performance of construction sites will remain poor until professionals and owner-managers in the built environment are willing to change their orientations and take up the responsibility. Similarly, Misiurek K. and Misiurek B. [27] highlighted that not technical problems but human errors have the utmost influence on the incidence of occupational accidents. According to Misiurek K. and Misiurek B. [27], the methodology for improving OHS in the construction sector is based on the selected constituents from the training within the industry program which includes: the selection of a procedure to be executed in the methodology, creation of a work breakdown sheet, organizing the procedure for eradicating and improving key points, preparation of warnings for each health and safety-related key point, identification of essential personal protective equipment, preparation of a work breakdown sheet for a new technique for the execution of an operation, and training of workers in the new standard of work and sustaining the methodology. All these factors contribute to the eradication of problems connected with the root causes of human mistakes. Sharma and Kumar [28] highlighted that training within industry programs deals with the following problems: (1) how to convey knowledge efficiently to the employees in the construction sites, how and why should it be done in a definite manner, (2) how to provide training to employees under their requirements, (3) how to improve occupational health and safety by applying a series of questions through the 5W1H method, (4) how to outline a strategy for the building of interactions within the team, and (5) how to use technical processes for the recognizing, eradication, and protection against the hazards.

Colin Fuller and Luise Vassie [29] highlighted that monitoring the application of health and safety management procedures and policies is a vital feature of improving health and safety, as it ensures an organization determines whether recommended standards are followed and are in line with the organizational objectives. Measures to improve occupational health and safety can be accomplished through (1) compliance

with health and safety legislation and management system, (2) monitoring deficiencies in health and safety performance, (3) recording performance information that enables preventative and corrective management activities, (4) documentation of the root causes of occupational accidents and nonconformances, and (5) application of quantitative and qualitative measures in preventative and corrective activities.

Antwi-Afari et al. [30] highlighted that with the development of sensing and warning-based innovation, practitioners and researchers have realized that their implementation could offer effective solutions to the improvement of OHS in the construction sector. Improving OHS is a social procedure and the application of economic justification influences the process. Though, organizations and workers are not firmly rational and economically analytical individuals. But, Broek K Van Den et al. [31] pinpoint that occupational accident costing is a valuable method of measuring, managing, and eventually improving health and safety. Mossink and Licher [32] highlighted OHS and profits remain distinct goals, nevertheless the economic theory can give suggestions as to when improvements serve both profits and OHS. Myers et al. [33] maintain those economics can impact decision-makers, but the economic approach is sometimes challenging to defend in front of an audience unwilling to accept health and safety messages, in that circumstance, a narrative approach of incorporating economic arguments works better.

Improvements in occupational health and safety at work can bring economic advantages to organizations, employees, and societies as a whole [34]. Occupational accidents can give rise to serious costs for an organization, for small establishments, in particular, occupational accidents can have substantial financial consequences. British Safety Council 2014 [35] asserts that investing in the management of OHS is an opportunity to gain a variety of advantages including boosting the organization's image and avoiding the costs of penalties. EU-OSHA 2007 [36] highlighted the benefits of investing in OHS, including that it (1) helps to demonstrate that an organization is socially responsible, (2) protects and improves brand image and value, (3) supports maximizing the productivity of workforces, (4) improves workers' commitment to the organization, (5) builds a more competent and healthier workforce, (6) reduces operational costs and disruption of the progress of work, (7) enables organizations to meet customers' expectations on OHS, and (8) encourages the employees to stay longer in active life.

Lingard [37] highlighted that ensuring occupational health and safety knowledge is used to inform decisions made in the planning and design stages of projects remains a problem for the construction industry. The generally cited difficulty is the extent of construction occupational health and safety knowledge owned by the upstream decision-makers. But preconstruction decision-makers must be better informed concerning occupational health and safety to allow them to understand more insightful risk consequences of their decisions. The construction OHS challenge is complex, and it needs a refined answer. Decomposing and solving a single feature of the problem is doubtful to bring about important improvements. Preferably, the incorporation of multiple approaches is essential in the delivery of improvements in the construction occupational health and safety, as well as in the prevention of accidents in the sector.

3. Method

A quantitative method was adopted for this study with a structured questionnaire of 443 distributed to the construction professionals in the Federal Capital Territory, Abuja, Nigeria. To achieve a degree of generalization, the construction

professionals' population that was considered were Architects, Quantity Surveyors, Engineers, and Builders in the Federal Capital Territory, Abuja, Nigeria. To ascertain the total number of members of each of the professional bodies, a request was sent to them. The sampling frame is 8974. The number of respondents was calculated at a 95% confidence level with a maximum error of 5%. The sampling size is 443. The questionnaires were proportionally allotted according to the profession through a stratified sampling method. The measurement scale of the questionnaire is illustrated in **Table 1**, in which respondents chose options arranged in a 5-point Likert scale from strongly agree to strongly disagree.

(A) Establishment of the Nigerian Construction Industry Development Board with roles to include	
1	For researching OHS for the prevention of occupational accidents
2	Compilation of occupational accidents' data to identify root causes and for future prevention
3	Monitoring construction professionals' activities concerning OHS
4	Organizing OHS training
5	Development of OHS plan for the country
(B) Technical assistance and collaboration among construction professionals	
1	Support for recognition of OHS for the prevention of occupational accidents through a national action program.
2	Forging, leveraging, promoting knowledge-sharing, and developing policy innovations on OHS.
3	Providing suitable technical assistance to OHS in the development and consolidation of the statutory and institutional framework on health and safety rules for the prevention program.
4	Provision of technical assistance on OHS in construction sites to be supported by industrial-based experience with the tested practice of application of preventive measures and capacity-building on OHS.
5	Technical assistance for the appraisal of health and safety standards before implementation or adoption of new health and safety standards.
(C) Skill development in the management and communication of occupational health and safety	
1	Ensure technology on OHS is adapted to local conditions for the prevention of occupational accidents.
2	The introduction of new technology on OHS should be complemented by adequate information and training.
3	The hazards associated with new technologies used in the construction sites have to be known and effective measures are taken to remove or manage them.
4	Procuring relevant databases and knowledge on OHS from developed countries.

5	Consultation with workers' representatives whenever new technology on OHS is introduced, such technology should not be imported without sufficient measures established, including information on the safe application in the language of the importing nation.
(D) Awareness-raising and advocacy on occupational health and safety	
1	The OHS program should include strategies to promote broad awareness of the social and economic significance of improving working conditions.
2	Better communication and work relationships on OHS in the organization.
3	Occupational health and safety (OHS) awareness campaign targeted at acquainting both employees and management with hazards in the construction sites and their obligations in the prevention of occupational accidents.
4	Occupational health and safety (OHS) education raises awareness and positive attitudes that are conducive to health and safety at work.
5	Communicating skills that will allow managers and employees in the construction sites to identify risk problems give rise to occupational accidents.
(E) Use of International Labour Organization (ILO) mechanism on occupational health and safety	
1	Application of codes of practice on OHS to suit local condition
2	Use of ILO 2001 Occupational Health and Safety Management System (OHSMS)
3	Ratification of ILO conventions
4	Application of ILO policy on OHS
5	Use of ILO standards on OHS to suit local standards.
(F) International collaboration with other professional bodies on health and safety	
1	Team collaboration with international organizations on OHS as the immediate drivers of health and safe work practices
2	Collaborations focus on main areas like setting and benchmarking OHS standards
3	Collaborations with foreign occupational health and safety research organizations and organizing conferences bringing together international experts on OHS
4	Collaboration to better accomplish OHS strategic outcomes
5	Collaboration to explore avenues of raising OHS standards
(G) Proper monitoring and recording of all injuries	

1	Recording performance information that enables preventative and corrective management activities
2	Monitoring deficiencies in health and safety performance
3	Documentation of the root causes of occupational accidents and nonconformances
4	Compliance with health and safety legislation and management system
5	Application of quantitative and qualitative measures.
(H) Adequate allocation of resources (human, financial, and technology) on OHS	
1	Allocation of the resources essential to accomplish and sustain an acceptable risk level on OHS.
2	Assign adequate resources to accomplish the objectives defined in the implementation plans of OHS.
3	The distribution of resources follows logically in harmony with a comprehensive problem-solving procedure on OHS
4	Resources to develop the future direction of the OHS.
5	Occupational health and safety resources for better OHS programs.

Table 1.
Measurement scale of approaches to improving OHS.

3.1 Data analysis

A total number of 399 questionnaires were returned out of 443 distributed. Exploratory factor analysis (EFA) was conducted on the data with SPSS software version 26. The confirmatory factor analysis (CFA) was used to validate the factors obtained from EFA. The CFA was conducted through structural equation modeling-AMOS. Some indices were used to evaluate the goodness-of-fit index of the CFA model. These indices include root means square error of approximation (RMSEA), the goodness-of-fit index, adjusted goodness-of-fit index, comparative fit index (CFI), and normal fit index [38]. SPSS software version 26 was used for descriptive analyses.

4. Results

4.1 Respondents' demography information

Four hundred forty-three structured questionnaires were distributed, and 399 were returned representing 90.07%. The respondents' background information is as follows. The academic qualifications: National Diploma (3%), Bachelor of Science/Higher National Diploma (64%), Postgraduate Diploma (10%), Master of Science (17%), and Ph.D. (6%). Professional affiliation: Architects (20.8%), Builders (3.3%), Engineers (58.6%), Quantity Surveyors (16.8%), and Surveying and Geoformation (0.5%). Year of experience: 1–5 years (7.85%), 6–10 years (8.5%), 11–15 years (22.8%), 16–20 years (27.8%), and 21 years and above (33.1%). Firms, organizations, and institutions: Consulting firms (25.3%), Contracting firms (16.8%), Developer organizations (23.1%), Educational institutions (6.8%), Governmental agencies (22.8%), and Multinationals (5.3%).

4.2 Dimensionality of the scale

Evaluation of the data was conducted through EFA. The cutoff value of the exploratory factor was fixed at 0.40 according to Yong and Pearce [39], through the principal component in varimax rotation. Values less than 0.4 were dropped, but values above 0.4 were considered for the analysis. **Table 2** shows the result of the EFA for this study. Kaiser-Meyer-Olkin (KMO) was used to evaluate the appropriateness of data for EFA. Pallant [40] highlighted that a KMO value of 0.6 is suggested as the minimum value for good factor analysis. The KMO result obtained was 0.828, therefore, the data were considered acceptable for the analysis. Confirmatory factor analysis was conducted with structural equation modeling-AMOS. CFA was used to develop and check the psychometric validity of the approaches to the improvement of occupational health and safety in the Nigerian construction industry. The unidimensional approach of OHS is the Establishment of the Nigerian Construction Industry Development Board, technical assistance and collaboration, skill development, awareness-raising and advocacy, use of International Labour Organization mechanism, international collaboration, proper monitoring and recording, and adequate allocation of resources. The initial goodness of fit showed that the model was not fitted as illustrated in **Figure 2**. The result of the indices was CFI = 0.874, incremental fit index (IFI) = 0.875, Tucker-Lewis index (TLI) = 0.864, P = 0.000, RMSEA = 0.05, P = 0.00, and ratio = 2.001. Although RMSEA = 0.05, P = 0.00, and ratio = 2.001 met the minimum threshold, CFI = 0.874, IFI = 0.875, and TLI = 0.864 did not meet the minimum threshold. Thereafter, variables that contributed to the poor fit of the model were dropped [41]. The total number

Rotated component matrix[a]								
	Component							
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
C1Q1		.687						
C1Q2		.790						
C1Q3		.802						
C1Q4		.730						
C1Q5		.682						
C2Q1	.635							
C2Q2	.675							
C2Q3	.795							
C2Q4	.812							
C2Q5	.776							
C3Q1			.731					
C3Q2			.690					
C3Q3			.790					
C3Q4			.622					
C3Q5			.670					
C4Q1					.612			
C4Q2					.758			

Rotated component matrix[a]								
	Component							
	1	2	3	4	5	6	7	8
C4Q3					.649			
C4Q4					.723			
C4Q5					.608			
C5Q3								.704
C5Q4								.700
C5Q5								.729
C6Q1				.545				
C6Q2				.686				
C6Q3				.628				
C6Q4				.619				
C6Q5				.710				
C7Q1						.735		
C7Q2						.655		
C7Q3						.551		
C7Q4						.608		
C7Q5						.570		
C8Q1							.583	
C8Q2							.536	
C8Q3							.734	
C8Q5							.640	

Extraction method: Principal component analysis.
Rotation method: Varimax with Kaiser normalization.[a]

[a]*Rotation converged in seven iterations.*

Table 2.
EFA of approaches to improving OHS.

of six variables with low factor loadings was eliminated. **Figure 3** illustrates the final model with acceptable goodness of fit. **Table 3** illustrates the acceptable model fit of the approach to improving occupational health and safety of the Nigerian construction industry with the following indices such as minimum discrepancy divided by degree of freedom (CMIN/DF) = 1.846, CFI = 0.912, standardized root mean squared residual (SRMR) = 0.063, RMSEA = 0.055, and Pclose = 0.167. **Table 4** illustrates the standardized regression weight of the factors which are all above the minimum threshold of 0.5 of a good model.

4.3 Reliability and validity of approach to improving OHS

Table 5 illustrates that the Cronbach coefficient is greater than 0.6, therefore it is necessary to measure the adequacy level of the reliability to test the causal effect of the relation. According to Ursachi et al. and Nunnally and Bernstein [42, 43], the

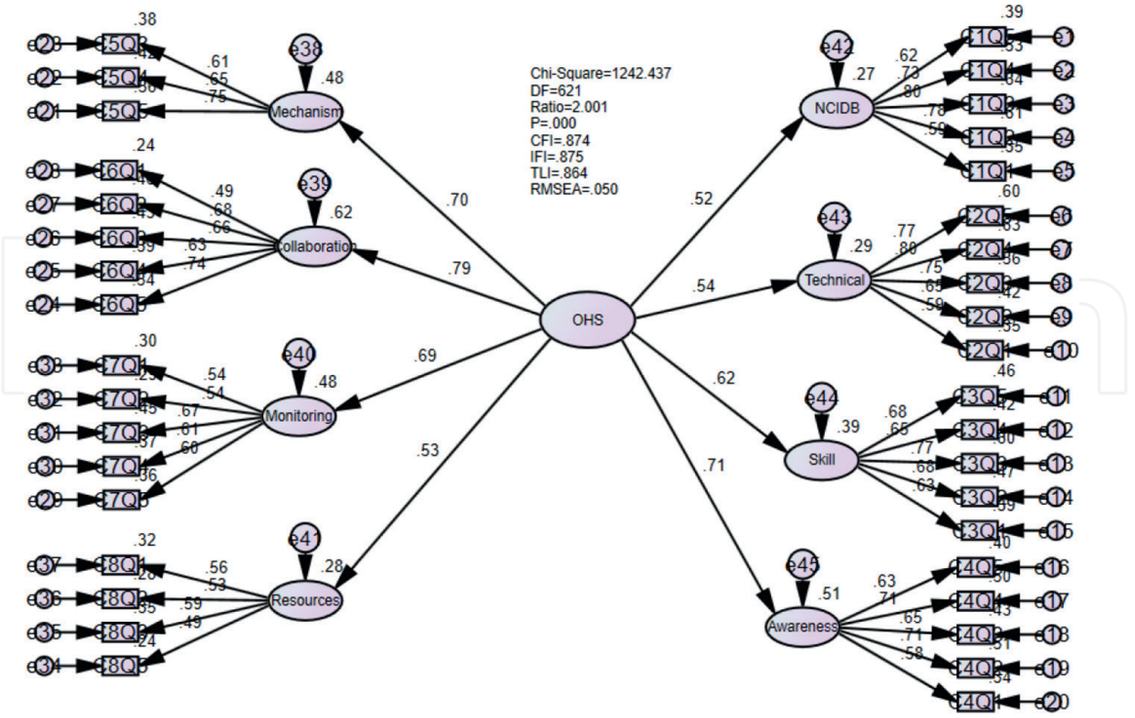

Figure 2.
Initial model of the approaches to improving OHS.

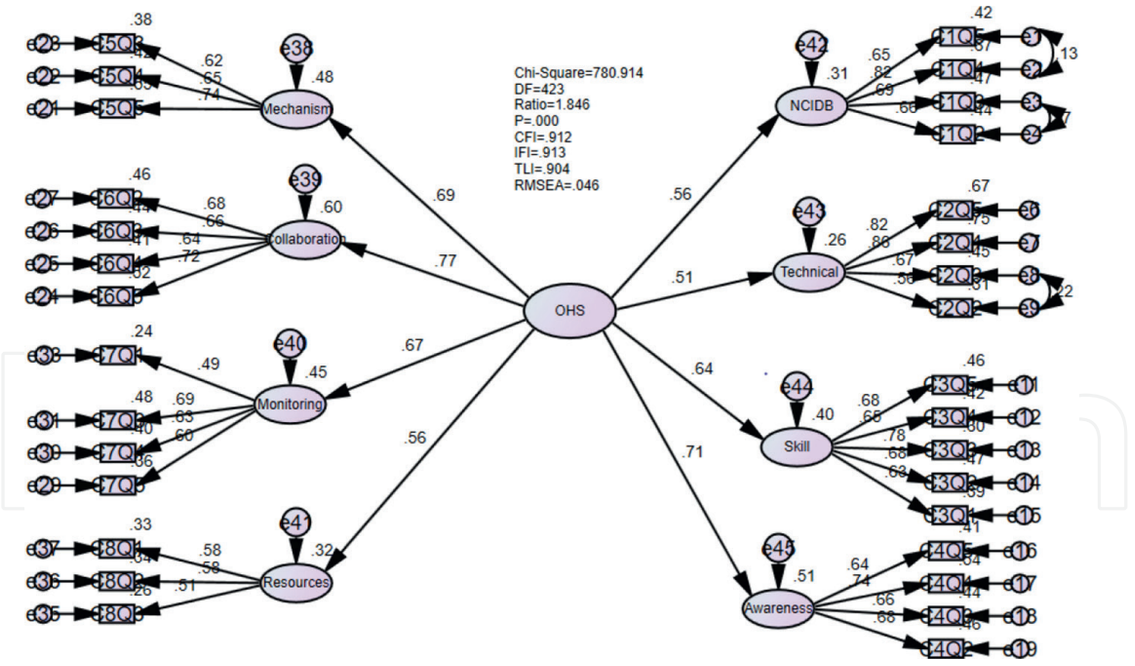

Figure 3.
Final model of the approaches to improving OHS.

generally accepted standard is Cronbach's alpha of 0.6–0.7 which shows a suitable level of reliability. Also, 0.8 or higher is a good level. But, values greater than 0.95 are not certainly good, as they can be seen as a sign of redundancy [44]. Similarly, the composite reliability in all cases exceeded the least level of 0.6 as suggested by Bagozzi and Yi [45]. While the average variance explained was equal to 0.5 according to Awang [46], however, Bagozzi [47] stated that a value of 0.3 and above could be

Name of the index	Level of acceptance	Results obtained
Pclose	˂0.05	0.897
RMSEA	˂0.08	0.046
CFI	˃ 0.90	0.912
IFI	˃ 0.90	0.913
SRMR	˂ 0.08	0.055
Ratio	2–5	1.851

Table 3.
Goodness of fit of the model of approaches to improving OHS.

Construct	Path	Construct	Factors
NCIBD	<—--	OHS	.557
Resources	<—--	OHS	.565
Monitoring	<—--	OHS	.673
ILO mechanism	<—--	OHS	.694
Awareness-raising and advocacy	<—--	OHS	.713
Skill development	<—--	OHS	.635
Technical assistance	<—--	OHS	.510
International collaboration	<—--	OHS	.774

Table 4.
Standardized regression weight of the factors of approaches to improving OHS.

considered. **Figure 2** indicates that the model fit is acceptable. Also, the standardized regression weights of the success factors were higher than 0.5 and significant at the 95% confidence level, confirming the convergent validity of the constructs as illustrated in **Table 5**. The validity and reliability of the approaches to improving occupational health and safety of the Nigerian construction industry had been demonstrated and structured in 31 variables at eight dimensions.

5. Discussion

The study identified the approaches through which the occupational health and safety of the Nigerian construction industry can be improved. These include the Establishment of the Nigerian Construction Industry Development Board (NCIDB), technical assistance and collaboration, skill development, awareness-raising and advocacy, use of International Labour Organization mechanisms, international collaboration, proper monitoring and recording, and adequate allocation of resources. The validity of the approach was tested and found to be acceptable. Confirmatory factor analysis was used to validate exploratory factor analysis-derived factor structures of the measurement scale [48]. The yardsticks of the different model fit indicators were considered. RMSE values of 0.046 in this study illustrate a good fit, as suggested by Bentler and Bonett [49] that RMSEA values of 0.05 and 0.08 are satisfactory. The CFI and IFI values in the model were

Code	Factor loading	Composite reliability	Average variance explained	Cronbach Alpha
Establishment of the Nigerian Construction Industry Development Board				
C1Q5	0.652	0.8	0.5	0.83
C1Q4	0.821			
C1Q3	0.688			
C1Q2	0.662			
Technical assistance and collaboration among construction professionals				
C2Q5	0.818	0.8	0.5	0.84
C2Q4	0.863			
C2Q3	0.674			
C2Q2	0.561			
Skill development in the management and communication of occupational health and safety				
C3Q5	0.678	0.8	0.5	0.81
C3Q4	0.65			
C3Q3	0.775			
C3Q2	0.682			
C3Q1	0.625			
Awareness-raising and advocacy on occupational health and safety				
C4Q5	0.642	0.8	0.5	0.82
C4Q4	0.735			
C4Q3	0.663			
C4Q2	0.676			
Use of International Labour Organization mechanism on occupational health and safety				
C5Q5	0.742	0.7	0.5	0.71
C5Q4	0.65			
C5Q3	0.616			
International collaboration with other professional bodies on health and safety				
C6Q5	0.724	0.5	0.8	0.77
C6Q4	0.639			
C6Q3	0.663			
C6Q2	0.677			
Proper monitoring and recording of all injuries				
C7Q5	0.598	0.4	0.7	0.70
C7Q4	0.629			
C7Q3	0.69			
C7Q1	0.494			
Adequate allocation of resources (human, financial, and technology) on OHS				
C8Q3	0.514	0.3	0.6	0.60
C8Q2	0.583			
C8Q1	0.576			

Table 5.
First-order CFA of the approaches to improving OHS.

higher than 0.9, therefore illustrating a reasonably good fit [49]. Generally, indices values support the concept of a good fit and offer confirmatory proof for the factor structure. In the appraisal of the psychometric properties of the approaches to improving occupational health and safety of the Nigerian construction industry, construct validity was supported by CFA and EFA. From the standardized loading factors of the construct, international collaboration has the highest value of.774. According to Fingerhut [50], the exchange of experience and collaboration among centers is assisted by meetings of collaborating centers, which can support institutional capacity in occupational health and safety in regions and nations. There are great benefits in international collaboration where knowledge and experiences are shared and where we learn from the challenges and strengths faced by different nations in the quest for healthier and safer construction sites. Similarly, Hsu et al. [51] point out that collaboration could act as the instant driver of health and safe work practices. This sharing of experiences and information can help to improve occupational health and safety in the spirit of solving OHS matters in an informed manner.

Furthermore, from the standardized loading factor, awareness-raising and advocacy have the second-highest value of.713. There is a need for consideration of awareness of occupational health and safety and advocacy for a greater awareness of hazards in the workplace, which should include both health and safety programs. Employees and management team participation in health and safety programs allows them to easily accept and understand OHS changes. According to Pillay et al. [52], the absence of awareness in OHS contributes to construction accidents. Trethewy [53] highlighted that practical results and positive feedback produced from OHS observation and reporting not only improve awareness of OHS behavior and workplace safety but also induce a change process that assists to renew organizational safety culture and values. According to Teo et al. [54], technical and safety training can reduce the absence of health and safety awareness inherited in construction employees.

Use of ILO mechanism, proper monitoring, and recording of occupational accidents and skill development each has the following loadings of.694, .673, and.635, respectively. ILO has produced many instruments on OHS that can help to improve OHS. The need to use these instruments is important for improving the OHS of the Nigerian construction industry. While Yiu et al. [55] advocated for a comprehensive occupational health and safety monitoring system to be established to improve the success of safety management. Also, many nations are making important investments in training, education, job creation, and skill development, to this extent, ILO 2018 [56] suggests that it is significant to include OHS in these programs. To do so, it is essential to understand and solve the problems of health and safety risks confronted by employees and management in the workplace.

Other approaches with their loading factors are the Establishment of the Nigerian Construction Industry Development Board-.557, adequate allocation of resources-.565, and technical assistance from the professionals. The need for the establishment of a board in the construction industry similar to the Construction Industry Development Board (CIDB) in Malaysia and Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) in the UK will support the Nigerian construction industry in improving the occupational health and safety of the sector. While Manuele [57] pointed out that it is absolute that if sufficient resources are not provided on OHS, tolerable risk levels cannot be sustained.

6. Conclusions

The construction industry is universally ranked as the most hazardous sector. However, many nations have put immense efforts to improve health and safety performance as well as bring about the reduction in injuries' occurrence. Nevertheless, the construction industry remains to lag behind other sectors with a high record of accidents. The construction industry must be stimulated to standardize its safety and health practices and performances. Better opportunities must be engaged to learn from failures with the application of preventive measures to curb accident occurrence. World has become a global village, through crossing borders-arrangements, technology, and corporation. Construction worker health and safety have become a concern that is shared universally. Since construction health and safety issues are very alike from nation to nation, they can therefore be addressed on a global scale. Solutions to health and safety issues in one nation can readily be implemented in other nations to produce further improvements. Improving occupational health and safety will contribute to the accomplishment of the Sustainable Development Goal (SDG) on decent work and improved economic growth of the Nigerian construction industry's global cooperation. The study recommends that government at all levels should participate in the stringent legal enforcement of occupational health and safety legislation. Also, the economic approach to OHS must be viewed from a wider perspective, not only focusing on just economic benefits and costs. It is essential to outline the potential worth of OHS as seen from a business viewpoint. Achieving greater coherence in OHS could come through well-defined regional and country initiatives.

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