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Strategies Required for Bridging Artisan's Skill Shortages in the Nigerian Building Construction Industry

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Abstract: *Nigeria, as a rapidly developing nation, faces significant challenges in ensuring the quality and efficiency of its construction sector. The study aimed was to assess strategies required for bridging artisan's skill shortages in the Nigerian building construction industry. Using a quantitative technique and a descriptive survey design, the study employed a survey strategy and gathered data via a questionnaire survey. Additionally, SPSS software version 22 was utilised for data analysis tools, and the study uses a basic random sampling technique. The analysis was of the descriptive type, employing the mean ranking technique and percentage. The study revealed that provision of adequate competency-based trainers was rated the most important strategy, suggesting that qualified trainers are essential for effective skill development. Periodic capacity building for practicing artisans, regular training and development programs for existing artisans was considered crucial for maintaining and enhancing their skills. There is need for government to institutionalize the National Skills Qualification (NSQ) framework and promote its adoption within the building construction industry. This will ensure that artisans have access to standardized training and certification, addressing skill shortages and improving quality project delivery. Government should enact enabling legislation and a strong regulatory framework to enforce building codes and ensure industry standards. This would involve establishing clear guidelines for construction practices, setting quality standards, and implementing mechanisms to monitor compliance. The framework should be enforced through regular inspections, audits, penalties, and incentives like tax breaks or preferential treatment in government contracts to encourage businesses to adopt best practices.*

Key Words: *Strategies, Artisan's Skill Shortages, Building Construction, Quality, Efficiency.*

Introduction

The building sector is a vital component of any nation's economy, providing essential infrastructure and housing. However, the quality and efficiency of construction projects often hinge on the skills and expertise of the artisans involved (Orekan & Babatunde, 2020; Umar, 2023). Handley (2022) revealed that traditional methods of assessing artisan skills, such as practical examinations and certifications, can be time-consuming, subjective and prone to inconsistencies. In recent years, there has been a growing recognition of the potential of digital technologies to revolutionize various industries, including education and training. E-portfolios, a digital collection of an individual's work, have emerged as a promising tool for assessing and documenting learning outcomes and offer a comprehensive and transparent approach to evaluating the skills and competencies of trained artisans in construction industry (Tormala, 2021; Saarinen, Seitamaa-Hakkarainen & Hakkarainen, 2021).

Jiboye, Adebayo and Obakin (2020) explained that the building construction industry in Nigeria has witnessed substantial growth in recent years, fueled by rapid urbanization, infrastructure development, and increased housing demand. However, this growth has outpaced the availability of skilled artisans, leading to a widening skills gap. This gap is particularly pronounced in critical areas such as masonry, carpentry, plumbing, and electrical work. The study of Lawal, Manga and Imam (2022) found that the industry is experiencing a shortfall of approximately 200, 000 skilled workers annually. By implementing these strategies, Nigeria can bridge the skills shortages in its construction sector, ensure sustainable development, and meet the growing demand for infrastructure and housing (Obianyo *et al*., 2021). In view of that this study proposed a design of e-portfolio management system for the assessment of trained building sector artisans in Nigeria in line with the National Skills Qualification Framework (NSQF) module. However, these approaches may not accurately capture the full range of skills required for modern construction practices. Furthermore, there is a dearth of standardized frameworks for assessing the skills of building sector artisans in Nigeria. This lack of standardization makes it difficult to compare and evaluate the competencies of individuals across different training programs. Therefore, this study will intends to assess the strategies required for bridging artisan's skill shortages in the Nigerian building construction industry.

Scope of the Study

According to the framework, the primary stakeholders in the NSQ training, assessment, and certification procedures are trained artisans, center trainers, master craftsmen, assessors, and internal and external verifiers. These individuals are the responses that are targeted. The study's methodology is descriptive in nature because it involves the distribution of questionnaires and historical data. Precise research designs are crucial because they dictate the methods and choices that researchers must make throughout the study and establish the reasoning behind the conclusions drawn at the conclusion.

The study is restricted to the use of NOS for the seven (7) Qualifications (trades) and the institutionalization of National Skill Qualifications (NSQs) for building construction qualifications (trades). These trades were developed, classified, validated, and are currently being institutionalized for the N-power build program in three (3) chosen training centers, one (1) from each of the three (3) senatorial zones of the seven (7) states (Kaduna, Kano, Kastina, Kebbi, Jigawa, Sokoto, and Zamfara) of North-West Nigeria. These trades include masonry, carpentry and joiner, electrical and plumbing installation, welding and steel fabrication, tiling and decorative stone work, and painting and decoration.

Significance

The study would assess the institutionalization of the NSQs and how the NSQF stakeholders would work together to identify some potential solutions that would overcome the obstacles affecting the delivery of NSQs in the training, assessment, and certification of building construction artisans in the study area. It would also help to bridge the skill shortages caused by the institutionalization of the NSQ in the study area. The anticipated findings of this study improved the production capacity of these trained and certified (competent) artisans in the building production process.

Literature Review

Challenges in Bridging the Skills Shortages

The challenges identified in bridging the skill shortsges in the study areas are Rapid change in technology, aging of skilled workforce in the industry, Poor image associated with construction labor, very few Establishing industry base skills acquisition centers, lack of good wages and remuneration to skilled artisans, debilitating corruption, drug abuse counseling among youth, information and communication technology (ICT)

Rapid change in technology

Construction sector is a labor-intensive industry, which places heavy reliance upon the skills of its workforce. These skills need updating continually as many of the trades involved in the industry become increasingly specialized. During the 1980s, there was a rapid rise in construction activity within the UK, followed by a sudden but short-lived boom accompanied by skill shortages. The construction industry is now experiencing a deeper and longer lasting recession than originally predicted, resulting in valuable employees in all sections of the industry being lost - a high proportion of whom may not return to the construction industry. Construction is in a period of rapid cultural change accompanied by the introduction of new technologies and new ways of organizing construction activities. Powerful national and multinational clients are continuously influencing the choice of these technologies through their demands for faster construction times. The construction industry is also continuing to face increased competition in search of eligible recruits to train accordingly. Employment within the construction industry is moving away from large and medium sized firms to small firms and working proprietors due to poor economic situation we found our self.

Aging of skilled workforce in the industry

The issues of skills' shortage due to the ageing of the workforce and evolves a viable road map to address issues facing the construction industry is necessary (Sivam, Trasente, Karuppannan & Chileshe, 2017). Ageing and the ageing of the workforce and reviews the skills' shortage in the construction industry. The roadmap that can be used as a vehicle to mitigate the imbalance between the supply of and demand for skills in the construction industry due to the ageing of the workforce include: a mis-match between the demand for and supply of workforce; other issues such as training, health risk, employer attitudes and risks associated with employing an aged workforce; and innovation of construction techniques and construction material (Savory, 2016).

Artisans in the industry play a very crucial role to the survival and growth of the economy as they are mostly engaged in the practical realization of construction projects. As a country endowed with skilled manpower, the construction industry in Nigeria can best be described as ironic. Though on the one hand, it was acclaimed to be the highest employer of the nation's workforce after agriculture, while on the other, it is faced with challenges in technical skilled craftsmen shortage which affects organization's productivity, quality of work, duration of projects and on firm's profits (Bilau *et al*., 2015). Not much research has examined the shortage of skilled workforce in the perspective of small and medium construction firms (SMCFs) in Nigeria.

Poor image associated with construction labor

The construction industry has been experiencing chronic problems such as poor health and safety (H&S), inferior working conditions, and non-achievement of quality, which have had an adverse effect on construction productivity, overall performance, and image (Adavbiele, 2013). This is as

a results of : construction workers are exposed to excessive noise levels; material shortages affect productivity more than other related factors; the non-achievement of quality negatively affects the image of the construction industry more than other factors; construction worker morale and satisfaction is substantially affected by inadequate supervision; the quality of life of construction workers is rated between poor to near poor, and working conditions on construction sites are rated as poor to average (Adavbiele, 2013). Unsatisfactory working conditions negatively affect productivity in the construction industry. Furthermore, the image of the construction industry is tarnished (Yin & Chan, 2013).

Very few industries base skills acquisition centers

Construction industries of developing countries, including that in Nigeria, facing many problems associated with skills acquisition centers. These may not be unconnected with the economic weaknesses which these countries are facing, inadequate resources to devote to efforts to improve the industry, the industry fails to receive the stimuli by way of job opportunities; and the market forces which support innovation are not present. Many of the governments of these countries do not recognize the importance and needs of the construction industry, and hence do not formulate and implement program for upgrading skills and the industries. Similarly, the inherent underdevelopment of the construction industries in these countries means that they are unable to deal with their weaknesses, to make a strong case for help, or to contribute to the efforts which the government makes to develop the industries.

Lack of good wages and remuneration to skilled artisans

The quality of a company depends on the skills of its work force to achieving the company's goals. This statement has far-reaching implications in construction because a firm seeking to achieve the best value for money for its clients would have to employ well skilled personnel to work with to this end (Ofori, 2012). The utilization of poor construction management techniques, unskilled artisans and the lack of technical knowledge for the supervision of large-scale projects, that the quality of work by construction firms in developing regions tend to be inferior compared to that of developed countries (Ofori, 2012). In Africa, the skills shortage has been acknowledged by Government and industry, the skills deficit appears to be on a path where demand continues to outstrip supply as a result of the substantial growth in infrastructure investment. Government-initiated projects also suggest a significant number of small (by value) municipal, provincial and national projects that will require more skills spread over several projects rather than a concentration of skills in fewer large projects (Ofori, 2012).

Debilitating corruption

Popular belief suggests that corruption and poverty are closely related in developing countries. Corruption in the public sector is often viewed as exacerbating conditions of poverty in countries already struggling with the strains of economic growth of construction industry and democratic transition. Alternatively, countries experiencing chronic poverty are seen as natural breeding grounds for systemic corruption due to social and income inequalities and perverse economic incentives. The burden of petty corruption falls disproportionately on poor people, for those without money and connections, petty corruption in public health, construction industry, or police services can have debilitating consequences. Corruption affects the lives of poor people through many other channels as well. It biases government spending away from socially valuable goods, such as education. It diverts public resources from infrastructure investments that could benefit poor people, such as health clinics, and tends to increase public spending on capital-

intensive investments that offer more opportunities for kickbacks, such as defense contracts. This could lower the quality of infrastructure, since kickbacks are more lucrative on equipment purchases. Corruption could also undermine public service and construction delivery. There is corrosive impact of government corruption on firm performance in general, management research also points to the heterogeneous impact of government corruption on individual firm performance, driven by the strategic activities conducted by firms in response to corruption (Holtgrewe, 2014).

Drug abuse

Drug use has a negative effect on both job safety and productivity. Due to the high accident rates in the construction industry, it is advisable for management to take necessary steps to implement programs and procedures that will increase construction safety and worker productivity. While the effects of a drug-related jobsite accident can be catastrophic for individuals and companies, management should realize that drug use among employees can be damaging to moral, productivity and quality even if it does not result in accidents. The level of teamwork required for excellent work is harder to achieve and efforts to improve project management by team building are hurt by the absenteeism and short-term employment typical of the employee that abuses drugs. Other areas where the project management of a construction company may compromise by worker drug use are recruitment and retention of human resources, career growth management, and safety. Drug testing construction workers is an effective method for reducing the number of impaired workers on a project site, increasing overall project safety, worker morale, productivity, and profits (Odesola & Idoro, 2014). Previous studies indicate that substance abuse among construction workers is associated with an increased risk of work-related injuries. In fact, using drugs could create a hazard not only for the worker who used them but also for his co-workers; for instance, marijuana can have a significant impact on workers' health, consciousness, performance, absenteeism, and injuries (Femi, 2014).

Information and communication technology (ICT)

Construction activity in general and construction information technology (IT) in particular is showing great promise in emerging economies. The construction industry around the world, both in developed and emerging economies is facing various challenges. The identification of the issues more critical for emerging economies would help to make the research efforts to address them more effectively. The industry is experiencing shortage of skilled labor to handle most of its construction projects. There is the need to develop a two-way collaborative technology that adequately connects the available skilled labor to the construction projects where they are needed and vice versa in order to reduce the shortage, by harnessing the strength of web-based technologies (Bello & Muhammad, 2021). Lack of knowledge about using a web-based system, low IT training among skilled labour and inaccurate information supplied by worker as major drawbacks to using a web-based system for sourcing for skilled labor. The study recommended that there is need to increase ICT trainings among construction professionals and its ancillary stakeholders in order to utilize new innovative ICT tools in the construction industry. Innovative ICT tools can be used to complement traditional methods in use in the construction industry so as to enhance the delivery of construction projects (Bello *et al*., 2021).

Provision of health and safety mechanism

The construction industry is one of the most injury-prone industries, in which production is usually prioritized over safety in daily on-site communication. Workers have an informal and oral

culture of risk, in which safety is rarely openly expressed (Kuroshi, 2015). Levels of involvement of key factors in the accidents were: problems arising from workers or the work team (70% of accidents), workplace issues (49%), shortcomings with equipment (including PPE) (56%), problems with suitability and condition of materials (27%) and deficiencies with risk management (84%) giving rise to the acts and conditions which, in turn, lead to accidents. It is argued that attention to the originating influences will be necessary for sustained improvement in construction safety to be achieved (Zhang, Teizer, Lee, Eastman & Venugopal, 2013). Provision of Safety kits, first aid box, fire extinguishers, sensitization and safety awareness programmed will go a long way in curtailing the problem, coaching construction site foremen to include safety in their daily verbal exchanges with workers has a significant positive and lasting effect on the level of safety, which may a proximal estimate for work-related accidents.

Good wages and remuneration to skilled artisans

For an employee, pay has a paramount importance in satisfying their economic need. The pay is so significant because when workers are satisfied with pay, their behavior and attitude could be influenced towards the desired objective Employees' dissatisfaction with pay can lower their morale and commitment, increase theft and enhance employee turnover (Onukwube, 2012). Supervision and remuneration are the provision of emotional/ technical support and guidance to workers who carry out the job (Salisu, Chinyio & Suresh, 2015). It was observed that supervision that encourages friendship, mutual trust, and respect and could also increase employee satisfaction. The relationship with an immediate supervisor is a step towards worker's job satisfaction. In fact, the concern supervisor has for his workers under him for their feeling; wellbeing and contribution is an indicator of job satisfaction (Salisu *et al.,* 2015)

Establishing industry base skills acquisition centers

The artisans and trainees must also be trained for self-employment adequate provision should be made in the centers curricula for them to acquire basic appreciation of entrepreneurship, building project management and works management, basic accounting principles particularly those involving costing and financial performance indices and principles of marketing. Combined honors in works and management services. In Nigeria, the story makes no remarkable difference as Small and Medium Scale Enterprises dominate the economy. Government over the years has formulated a number of policies aimed at developing Small and Medium Scale Enterprises. While most policies actually failed due to poor implementation, others however, succeeded. Efforts have been made in the past to identify the role of Small and Medium Scale Enterprises to the development of Nigeria's economy, its problems and prospects which created a vacuum on the role of government and other financial institutions in the development of Small and Medium Scale Enterprises which help in skills development (Oni, 2012).

Provision of quality and appropriate tools

The design of learning tools that appropriately support 'Learning Design'. Specifically, tools can be used in skills training to encourage the development of critical thinking in learners is important. The use of a partnering approach to deliver construction projects seeks to avoid the confrontational setting where energy and appropriate tools are used in a productive manner. Partnering calls for concerted effort from the project participants and aligns their often different and conflicting objectives. It was found that the monthly partnering review meetings and the use of appropriate tools underpinned the partnering success on skills development.

Provision of skills training programmed where certificate are issued to competent Artisans

Address the need for rapid skills formation to achieve the quantity and quality required to meet the nations development programmed, create synergy with the changing realities of the industry, promote access to training and career progression by the workforce, and emerging enterprise (Ngure, 2013) Create an equitable and sustainable financing system for training and education, which recognizes the need for all participants to contribute. Align professional training needs to be more closely harmonized with development priorities and the delivery approaches; and develop a focus on the specific requirements of public and private sector delivery management (Ada, 2016)

Provision of information and communication technology (ICT)

The information technology adoption and job satisfaction has been tapped by many researchers within the construction industry and from different perspectives in the importance of understanding the impact of IT adoption on individual performance and organizational productivity. Some focused-on construction, being one of the most information-dependent industries that have to adopt new technological applications to survive in business environments and achieve competitive advantage. Holtgrewe (2014) studies suggested that IT implementation is not just a technical enhancement but a managerial decision that involves re-engineering of organizational functions and operations that enhance skills development in the Nigerian construction industry.

Adequate motivation of artisans

Is important for artisan retention as a means of motivation which included equality, recognition, management and the working environment, and working relationships. Practical implications of Organizations that employ artisans should especially attend to their remuneration and development opportunities (Van Pattern & Williams, 2010). Lack of motivation result to poor productivity of construction workers is one of the causes of cost and time overruns in construction projects. The productivity of labor is important especially in developing countries, where most of the building construction work is still on manual basis. The policy makers and researchers should focus on the identified major factors in order to improve productivity.

Research efforts

Paucity of reliable information on skills gap creates the need for extensive research to obtain data on the actual supply of skills and demand for skills. Poor workmanship apparent in buildings across the country make up skilling existing Artisans and craftsmen imperative. Training can be through adult apprenticeship. However, appropriate framework for setting up building trade schools/centers devoted to skill training development no doubt will guarantee workforce development. Employers ought to develop standard for improving productivity of workforce. In addition, they need to have in place clear and definite strategies, goals and performance metrics. Guidance and counseling: reaching out to secondary school leavers to consider technical vocation is a strategy worth considering (Kuroshi, 2015).

Measures of Bridging Skills Shortages in the Building Construction Industry

The efforts of the Government, the industry and voluntary organizations in articulating strategies for effective Technical and Vocational Skills Development in bridging skills shortages have been tremendous but have remained uncoordinated and un-harmonized. In recent times, non-formal vocational skills training have received ascendancy. Many organizations are involved in establishing and running skills acquisition schemes some of which are politically motivated.

Federal and state Ministries through their parastatals, organized private sector (OPS), Nongovernmental organizations (NGOs), private individuals and private bodies adapt different measures/strategies in providing training in industrial and commercial skills, involvement of some of the major agencies in TVET skills acquisition and development.

Agencies Involved in Skills Development in Nigeria

The Industrial Training Fund (ITF) was established by Act No. 47 of 8th October, 1971 (as amended to-date) with the main purpose of "promoting and encouraging the acquisition of skills in industry and commerce with a view to generating a pool of indigenous manpower sufficient to meet the need of the Nation economy". The Act gave the fund powers to: provides facilities for training of persons employed in the industry and commerce; consider regular operational areas of industry and commerce that require specific manpower training and development inputs and recommend the kinds of training needed the standards to be attained and to ensure that such standards are met; approve courses and appraise facilities provide for training by other bodies particularly in industry and commerce; assist individuals persons or corporate organizations in finding facilities for training for employment in industry and commerce; and conduct and assist others to conduct research into any matter relating to training in industry. From the foregoing, it is glaring that the ITF was established to handle the issue of skills training, upgrading broadening in Nigeria. While addressing itself to its chartered responsibilities, the ITF evolved a system of Vocational Training Scheme whose principal is the National Apprenticeship Scheme. The scheme is conceived to provide principally two types of apprenticeship trainings with company-based apprentice training with institutional attachment and institutional based apprentice training with in-company attachment. The ITF implement the institutional-based apprentice training through its model industrial skills training centers which are evolving. Whether institutional or company based, the apprenticeship is designed to be competence-based and it is conduct on the basis of mandatory use of job specifications. This entails:

In addition to its direct provisions for the National apprenticeship Scheme, the ITF encourage the organized private sector employers to adopt the National apprenticeship scheme through the funds' grants and reimbursement scheme. This implies the appreciation by the ITF that the implementation of the National Apprenticeship requires collaboration. In pursuit of its mandate in skills acquisition through TVET, the ITF is making remarkable marks and is undertaking the following: Adding value to all citizens of Nigeria, especially the youths, for students of tertiary institutions, the ITF helps in their smooth transition from school to work place by exposing them to the practical aspect of the theories learnt in the formal setting. This is done through the student industrial working experience scheme (SIWES) which is a training program designed to expose and prepare students of universities, polytechnics and colleges of education the industrial work situation they would likely meet after graduation (source).

National Industrial Skills Development Program (NISDP), not unaware of the historical connection between youth unemployment and violence or crime, government have initiated a number of programs aimed at providing the unemployed youths with skills to either find paid employment or become self-employed. One of the programs is the National Industrial Skills Development (NISDP). NIDSP is a capacity building component of National Enterprises Development Program (NEDEP), a program conceived by the Federal Ministry of Trade and Investment in collaboration with ITF, the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN) and the Bank of Industry (BOI), NEDEP seeks to participate rapid

industrialization and stimulate inclusive economic growth by empowering the youths to be gainfully employed, through the provision of training in technical vocational skill in various Trade areas, business development services and business finance (source).

National Board for Technical Education (NBTE), was established in 1977 with the main functions to lay down standard of skills to be attained and continually review such standard as necessitate by technological and national needs. In addition to these, paragraph 8(1) of the Education (National Minimum Standards and Establishment of Institute) Decree, 1985 (now Act of parliament) added that "The Responsibility, since its inception, been articulating curricula that could be competency based, flexible in learning process and relating to industrial skills demand. The implementation has remained problematic because of in adequate human and materials resources (Mohammed, 2014). Although, the NBTE establishes curricula standards, it has no examination and certification powers. The Board's curriculum has limitations in application by the non-formal training provisions because of its general subject demands.

Methodology

Because it involved the distribution of questionnaires and historical data, this study was descriptive in nature. Precise research designs are crucial because they dictate the methods and choices that researchers must make throughout the study and establish the reasoning behind the conclusions drawn at the conclusion. Careful sampling techniques were used in the quantitative approach, which seeks explanation and a forecast that can be applied to other people and places. The survey approach was one of the research strategies used in this study. The target population of respondents in the study area (North-West) consisted of 750 NSQ stakeholders, who were used as the sample in this study. Krejcie and Morgam (1970) state that 254 people make up the sample of this population. The respondents were categorized based on their various responsibilities in the delivery of the NSQ training and assessment. The main stakeholders in the NSQ delivery are building construction professionals, trainers, work supervisors, assessors, internal verifiers, and external verifiers. A structured questionnaire that was created to accomplish the study's goal served as the main measuring tool in this investigation. The results of skill shortages for building construction delivery in Nigeria were analyzed using 22 versions of the Statistical Package of Social Science (SPSS) and descriptive statistics with mean ranking.

Findings

Demographic of the Respondents

Table 1: Educational Qualification of the Respondents

S/N	Qualification	Frequency	Percentage (%)
1.	HND	44	19.2
2.	BSc/BTech	42	18.3
3.	MSc.	87	38.0
4.	PhD	15	6.6
5.	PGD	28	12.2
6	ND	03	1.3
7	Others	10	4.4
	Total	**229**	**100**

Table 1 above shows the distribution of respondents based on their highest educational qualification. It is indicated that, 44 respondents which represents 19.2% were HND holders, 42 respondents which represents18.2% were BSc/BTech holders, 87 respondents obtained master degree which represents 38%. While 15 respondents which represent 6.6% were PhD holders, then 28 respondents which represent 12.2% were attended postgraduate diploma (PGD) Programme, 03 respondents obtained National Diploma which represents 1.3% and 10 respondents have other certificates representing 4.4%. Therefore, majority of the respondents attended MSc/MTech Programme.

Table 2: *Profession of the Respondents*

S/N	Designation	Frequency	Percentage (%)
1.	Architects	11	4.8
2.	Builders	182	79.5
3.	Engineers	12	5.2
4.	Others	24	10.5
	Total	**229**	**100**

Table 2 above depicted various professions of the respondents; Architects were 11 respondents which represents 4.8%, Builders were 182 respondents which represents 79.5%, 12 respondents were Engineers which represents 5.2% while others respondents were 24 which represents 10.5%. This shows that, the majority of the respondents were Builders with relative experience to respond to the study.

Table 3: *Professional Affiliation of the Respondents*

S/N	Professional Affiliation	Frequency	Percentage (%)
1.	Council of Registered Builders of Nigeria (CORBON)	175	76.4
2.	Architects Registration Council of Nigeria (ARCON)	07	3.1
3.	Nigerian Institute of Builders (NIOB)	14	6.1
4.	Council for the Regulation of Engineering in Nigeria (COREN)	12	5.2
5.	Others	21	9.2
	Total	**229**	**100**

Table 3 shows the designation of the respondents based on their professional affiliation, 175 respondents which represents 76.4% were affiliated to CORBON, 07 respondents which represents 3.1% were affiliated to ARCON, 14 respondents representing 6.1% were affiliated to NIOB while 12 respondents which represents 5.2% were affiliated to COREN and 21 respondents which is equivalents to 9.2% represented other respondents that may be affiliated to other professional bodies not mentioned or may not be affiliated to at all. The result shows that, the majority of the respondents were affiliated to CORBON.

Table 4: *Professional Registration Status of the Respondents*

S/N	Professional Registration Status	Frequency	Percentage (%)
1.	Technician	11	4.8
2.	Technologist	15	6.6
3.	Graduate	21	9.2
4.	Corporate	131	57.2
5.	Fellow	45	19.7
6.	Others	06	2.6
	Total	**229**	**100**

Table 4 revealed the professional registration status of the respondents based different categories. It is shows that 11 respondents which represents 4.8% were Technician, 15 respondents which represents 6.6% were Technologists, 21 respondents which represents 9.2% are on graduate status. The results further show that 131 respondents which equivalents to 57.2% attained corporate status level, while 45 respondents which represents 19.7% were reached Fellow status level and 06 respondents (i.e. 2.6%) are categorized under others having other certifications not mentioned above. The result shows that, the majority of the respondents attained corporate status level with some attained fellow level.

The strategies required for bridging artisan's skill shortages in the Nigerian building construction industry

Table 5: Strategies Required for Bridging Artisan's Skill Shortages in the Nigerian Building Construction Industry

Items	Mean	SD	Rank
Provision of adequate competency-based trainers for the industry.	4.8	0.1760	1st
Periodic capacity building for practicing Artisans in the industry.	4.7	0.3116	2nd
Enactment of Enabling Legislation for the National Building Code Enforcement for the Country.	4.6	0.2701	3rd
Provision of industry base training where artisans can become competent at individual pace	4.6	0.2153	3rd
More research on institutionalization of the NSQ for the industry	4.6	0.1092	3rd
Provision of adequate NSQ quality assurers for the sector.	4.5	0.2133	6th
Provision of effective career progression structure for practicing artisans of the industry.	4.5	0.1891	6th
Enactment of an enabling legislation for the delivery of NSQ for the industry.	4.5	0.1999	6th
Provision of industry-based assessment where artisans can become competent at individual pace.	4.4	0.2323	9th

Provision adequate wages/remunerations structure for practicing artisans of the country	4.4	0.3381	9th
Recognition for separation on the principles of operation by the stakeholders (professionals) in line with provisions of the National Building Code for the industry.	4.3	0.1294	11th
Proper implementation of National occupational standards (NOS) for the industry.	4.3	0.2770	11th
Provision of competency certificated skills training programs	4.3	0.2381	11th
Establishing of industry-based skills acquisition centers.	4.2	0.2471	14th
Provisions of parameters for benchmarking competencies of the qualifications in the Nigerian building construction industry.	4.2	0.0837	14th
Effective collaboration for the industry stakeholder's	4.2	0.2047	14th
Provision of adequately trained artisans for meeting the skills demand of the industry.	4.1	0.1459	17th
Replacement of competent skilled building construction artisans that have dwindled in the industry.	4.1	0.1497	18th
Provision of effective career progression structure for the practicing artisans of the industry.	4.1	0.1483	18th
Provisions for the e-platform for job placement and sourcing for the practicing artisans for the industry.	4.1	0.1445	18th
Deployment of e-assessment platform for the evaluation the NSQs trained artisans in the country.	4.0	0.1921	21st
Provisions for effective monitoring of the activities of the awarding body (NIOB) by the regulatory organization (NBTE) for the industry.	4.0	0.2634	21st
Establishment of effective labour conflict resolutions mechanism for the industry.	4.0	0.1710	21st
Design of e-assessment platform for the evaluation the NSQs trained artisans in the country.	4.0	0.1690	21st
Provisions for effective monitoring of the activities of the sector skills council (CORBON) by the regulatory organization (NBTE) for the industry	3.9	0.1531	25th
e-portfolio would carry along the grass root artisans	3.8	0.2536	27th
e-portfolio assessment would facilitate the IT readiness of trained artisans	3.8	0.2515	27th
Access to internet could be barrier to the e-portfolio assessment process.	3.8	0.3406	27th

e-portfolio would not affect the financial status of the trained artisans	3.5	0.2446	29th
Literacy level of artisans would not be a bearer to the e-portfolio assessment process.	3.4	0.3768	30th
Average	**4.2**	**0.2146**	

Table 5 show the respondents' ratings on the extents of the strategies required for bridging artisan's skill shortages in the Nigerian building construction industry. The result shows the mean scores and standard deviations of some strategies for bridging artisans' skill shortages obtained from the respondents. Provision of adequate competency-based trainers for the industry has mean score of 4.8 with standard deviation of 0.1760 and it is ranked 1st among the strategies for bridging artisan's skills shortage. Periodic capacity building for practicing Artisans in the industry had mean score and standard deviation of 4.7 and 0.3116 respectively, ranked 2nd. Enactment of enabling legislation for the national building code enforcement for the Country, provision of industry base training where artisans can become competent at individual pace as well as More research on institutionalization of the NSQ for the industry were ranked 3rd with same mean score of and standard deviations of 0.2701, 0.2153 and 0.1092 respectively. It is also revealed that, the provision of adequate NSQ quality assurers for the sector, provision of effective career progression structure for practicing artisans of the industry and enactment of an enabling legislation for the delivery of NSQ for the industry scored mean of 4.5 and standard deviations of 0.2133, 0.1891 and 0.1999 respectively which were ranked 6th among strategies to bridge the gap for skills shortage. The results further revealed that, followed by, provision of industry-based assessment where artisans can become competent at individual pace and provision adequate wages/remunerations structure for practicing artisans of the country scored mean of 4.4 and standard deviations of 0.2323 and 0.3381 respectively and it ranked 9th. While recognition for separation on the principles of operation by the stakeholders (professionals) in line with provisions of the National building code for the industry, proper implementation of National occupational standards (NOS) for the industry, and provision of competency certificated skills training programs were ranked 11th both with mean score of 4.3 and standard deviations of 0.1294, 0.2770 and 0.2381 respectively. Establishing industry-based skills acquisition centers, Provision of parameters for benchmarking competencies of the qualifications in the Nigerian building construction industry and effective collaboration for the industry stakeholders were ranked 14th with mean score of 4.2 and standard deviations of 0.2471, 0.0837 and 0.2047. It is also obtained that, provision of adequately trained artisans for meeting the skills demand of the industry, replacement of competent skilled building construction artisans that have dwindled in the industry, provision of effective career progression structure for the practicing artisans of the industry and provisions for the e-platform for job placement and sourcing for the practicing artisans for the industry were ranked 17th with mean score of 4.1 and standard deviations of 0.1459, 0.1497, 0.1483 and 0.1445 respectively. Similar results for deployment of e-assessment platform for the evaluation the NSQs trained artisans in the country, provisions for effective monitoring of the activities of the awarding body (NIOB) by the regulatory organization (NBTE) for the industry, Establishment of effective labour conflict resolutions mechanism for the industry and design of e-assessment platform for the evaluation the NSQs trained artisans in the country were ranked 21st with mean score of 4.0 and standard deviations of 0.1921, 0.2634, 0.1710 and

0.1690 respectively. However, the result also supported with the work conducted by Yang (2015) who observed that invest in expanding and improving vocational training programs to ensure that graduates possess the necessary skills to meet industry demands. Also Zakariya (2018) established that foster collaborations between educational institutions and construction companies to develop relevant curricula and provide hands-on training opportunities.

Furthermore, provisions for effective monitoring of the activities of the sector skills council (CORBON) by the regulatory organization (NBTE) for the industry obtained mean score of 3.9 with standard deviations of 0.1531 and 0.3116 respectively. Therefore, was ranked 25th among the strategies required for bridging artisan's skill shortages in the Nigerian building construction industry? Similarly, the result revealed that, e-portfolio would carry along the grass root artisans, e-portfolio assessment would facilitate the IT readiness of trained artisans, and internet access could be barrier to the e-portfolio assessment process were ranked 27th in which both obtained mean score of 3.8 and standard deviations of 0.2536, 0.2515 and 0.3406 respectively. Finally, e-portfolio would not affect the financial status of the trained artisans was ranked 29th with mean score of 3.5 and standard deviation of 0.2446. While, literacy level of artisans would not be a bearer to the e-portfolio assessment process was ranked 30th with mean score of 3.4 and standard deviation of 0.3768. Therefore, this shows that all the above points mean scores of 4.0 above were the major parameters of consideration when looking at the strategies required for bridging artisan's skill shortages in the Nigerian building construction industry. The extents of the strategies required for bridging artisan's skill shortages in the Nigerian building construction industry. The study used linear regression analysis to address the scarcity of artisan skills in Nigeria's building construction industry. This statistical method was utilized to evaluate the impact of various strategies to bridge the skill gaps among regional construction artisans. The findings from this analysis provided insights into the effectiveness of these strategies in tackling the pressing issue of skill shortages within the Nigerian construction sector. A linear regression was used to determine the effects of the strategies required for bridging construction artisans' skills shortages in the study area.

Conclusion and Recommendations

The study concludes that provision of adequate competency-based trainers was rated the most important strategy, suggesting that qualified trainers are essential for effective skill development. Periodic capacity building for practicing artisans, regular training and development programs for existing artisans was considered crucial for maintaining and enhancing their skills. There is need for government to institutionalize the National Skills Qualification (NSQ) framework and promote its adoption within the building construction industry. This will ensure that artisans have access to standardized training and certification, addressing skill shortages and improving quality project delivery. Government should enact enabling legislation and a strong regulatory framework to enforce building codes and ensure industry standards. This would involve establishing clear guidelines for construction practices, setting quality standards, and implementing mechanisms to monitor compliance. The framework should be enforced through regular inspections, audits, penalties, and incentives like tax breaks or preferential treatment in government contracts to encourage businesses to adopt best practices.

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