

Assessment of the Current Level of Skilled Manpower Supply in the Building Construction Sector of South-East Nigeria

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ABSTRACT: The building construction sector is a major driver of socio-economic development in Nigeria, yet the supply of skilled manpower remains a critical challenge, particularly in the South-East geopolitical zone. This study assessed the current level of skilled manpower supply in the building construction sector of South-East Nigeria, focusing on the availability, competency, and adequacy of artisans. The research adopted a descriptive survey design and involved 393 respondents, including trainees, vocational training centres, and contractors. Data were collected using questionnaires and interviews and analyzed using Relative Importance Index (RII) and ANOVA. Findings revealed that informal apprenticeship systems are the dominant pathway for developing skilled manpower (RII = 0.796), followed by artisan competency (RII = 0.775) and adequacy relative to demand (RII = 0.759). Workforce challenges include limited formal training, weak institutional support, migration, low youth participation, and an aging workforce. ANOVA results confirmed no significant differences in perceptions among artisans, contractors, and training centres. The study recommends strengthening vocational training, formalizing apprenticeship programs, enhancing government support, promoting youth participation, improving workforce retention, and implementing standardized certification and accreditation systems to sustain skilled manpower in the region.

KEYWORDS: Skilled manpower supply, Building construction industry, Artisans, Apprenticeship system, Vocational training, Workforce challenges

INTRODUCTION

The building construction sector plays a critical role in the socio-economic development of any nation by providing infrastructure, creating employment opportunities, and supporting industrial and urban growth. The construction industry contributes significantly to national development by facilitating the provision of housing, transportation systems, and other essential infrastructure necessary for economic and social activities (Mgbeahuru and Olughu, 2022). In developing countries such as Nigeria, the construction sector serves as a major source of employment and contributes substantially to gross domestic product and national productivity (Windapo, 2016).

In Nigeria, particularly in the South-East geopolitical zone, the building construction sector has experienced significant growth due to rapid urbanization, population increase, and increased demand for residential and commercial buildings. Urban expansion and infrastructure development in cities such as Enugu, Awka, Onitsha, Aba, Owerri, and Abakaliki have

increased the need for competent construction workers capable of delivering quality construction projects (Okorie,

2018). This rapid development has placed increased demand on skilled manpower such as masons, carpenters, electricians, welders, plumbers, and other specialized tradesmen essential for construction activities.

Skilled manpower is one of the most important resources in the building construction industry. Skilled workers possess the technical knowledge, experience, and competence required to perform construction tasks efficiently and according to required standards (Fagbenle, Ogunsemi, and Udegbe, 2011). The availability of skilled manpower contributes to improved productivity, reduced project delays, enhanced construction quality, and efficient project delivery (Windapo, 2016). Conversely, inadequate supply of skilled manpower can lead to poor workmanship, increased construction costs, and delays in project completion (Oladinrin, 2015).

Despite the importance of skilled manpower, the construction sector in Nigeria continues to face significant challenges

related to shortages of skilled labour. This shortage has been attributed to inadequate vocational training systems, lack of modern training equipment, insufficient funding for technical education, and declining interest in vocational careers among young people (Okoye, 2016). Furthermore, migration of skilled workers to other regions and countries in search of better employment opportunities has further reduced the availability of skilled manpower in the local construction industry (Ogunsemi and Jagboro, 2006).

Vocational and technical training institutions play an important role in manpower development by providing the necessary technical skills required in the construction industry (International Labour Organization [ILO], 2017). However, many vocational training centres in Nigeria face challenges such as inadequate facilities, insufficient funding, and outdated training equipment, which limit their ability to produce competent and industry-ready graduates (Okoye, 2016). This situation has contributed to the mismatch between the demand for skilled manpower and the supply of qualified construction workers.

The South-East geopolitical zone of Nigeria, comprising Abia, Anambra, Ebonyi, Enugu, and Imo States, has witnessed significant infrastructural development in recent years. This development has increased the demand for skilled manpower required for building construction projects. However, there is limited empirical data assessing the current level of skilled manpower supply in the building construction sector within the region. According to Ofori (2015), reliable manpower data is essential for workforce planning, policy development, and improving construction industry performance.

This study is delimited to the five states that make up the South-East geopolitical zone of Nigeria: Abia, Anambra, Ebonyi, Enugu, and Imo States. These states have experienced significant urbanization and infrastructural growth, increasing the demand for skilled construction workers. Major cities such as Enugu, Awka, Onitsha, Aba, Owerri, and Abakaliki have witnessed rapid expansion, making skilled manpower essential for sustaining development.

The study focuses on skilled tradesmen working in the building construction sector such as masons, carpenters, electricians, welders, and other specialized workers required for building construction projects. It does not extend to other sectors such as manufacturing, agriculture, or services.. The respondents include trainees undergoing vocational training, vocational training centres involved in manpower development, and contractors working with registered construction companies. These respondents represent both the supply and demand sides of skilled manpower in the building construction sector in South-East Nigeria.

Research Objective

The objective of this study is to assess the current level of skilled manpower supply in the building construction sector of South-East Nigeria.

Research Question

What is the current level of skilled manpower supply in the building construction sector of South-East Nigeria?

LITERATURE REVIEW

Level of Skilled Manpower Supply in the Construction Industry

Skilled manpower comprises individuals with formal or informal training, technical competence, and practical experience in trades such as masonry, carpentry, plumbing, welding, tiling, and electrical installation (International Labour Organization [ILO], 2019). The construction industry in Nigeria, particularly in the South-East, depends heavily on such workers for building and infrastructure projects. However, weaknesses in technical education, poorly coordinated training programs, and insufficient funding have limited the production of competent artisans, creating a growing gap between workforce demand and supply (Ikechukwu and Ugochukwu, 2020).

Many artisans are informally trained through apprenticeships, which provide practical experience but lack standardized curricula, formal assessment, and exposure to modern construction practices, safety standards, and quality control (Ogbuanya and Efobi, 2017; Ikechukwu and Ugochukwu, 2020). Technical colleges and vocational centres face challenges such as outdated curricula, inadequate equipment, and a shortage of qualified instructors, reducing their capacity to produce industry-ready graduates (Achuenu, Izam and Bustani, 2016). The declining interest of youth in construction trades and an aging workforce further exacerbate skilled labour shortages, while migration to urban centres and abroad reduces the local artisan pool (Oduami and Ene, 2021; Nwachukwu and Umeh, 2017; Okoye, Okechukwu, and Ezeokoli, 2019).

Shortages are particularly severe in rural areas, forcing contractors to transport workers from urban centres, which raises costs and delays projects (Okafor and Ilozor, 2022). Government interventions, such as skill acquisition programs, have largely been ineffective due to poor implementation, weak industry collaboration, and lack of standardized certification systems (Adebayo, 2020; ILO, 2020). Addressing these challenges requires improved vocational training, formal accreditation, and effective workforce development strategies to ensure an adequate supply of skilled manpower in the construction industry.

METHODOLOGY

Research Design

This study adopted the descriptive survey research design. This design involves the systematic collection of data to describe existing conditions and examine relationships among variables without manipulation. Creswell and Creswell (2018) stated that descriptive survey design is used to collect data from a representative sample to describe population characteristics, while Fraenkel, Wallen, and Hyun (2019) noted that it allows

the study of phenomena as they naturally occur. This design is appropriate for assessing the impact of skilled manpower supply on effective project delivery in the building construction sector in South-East Nigeria. The study utilized both quantitative and qualitative approaches through the use of questionnaires and interviews to obtain relevant data from respondents.

Population of the Study

The population of the study comprises vocational training centres, trainee manpower, and contractors involved in the supply and utilization of skilled manpower in South-East Nigeria. Specifically, the population includes eighteen (18) vocational training centres, six hundred and eight (608) trainee manpower, and two hundred and seventeen (217) contractors from construction companies registered with the Ministry of Works and Housing.

The total population for the study is eight hundred and forty-three (843) respondents. This population represents both the supply and demand sides of skilled manpower in the building construction sector and provides relevant data for examining its impact on effective project delivery.

Table 1 Trainees

State	Total per State	% per State
Abia	104	17.11%
Anambra	130	21.38%
Ebonyi	112	18.42%
Enugu	127	20.89%
Imo	135	22.20%
Total	608	100%

Table 2 Training Centres

State	Total per State	% per State
Abia	3	16.67%
Anambra	4	22.22%
Ebonyi	4	22.22%
Enugu	3	16.67%
Imo	4	22.22%
Total	18	100%

Table 3 Contractors

State	Total per State	% per State
Abia	47	21.66%
Anambra	45	20.74%
Ebonyi	32	14.75%
Enugu	43	19.82%
Imo	50	23.05%

State	Total per State	% per State
Total	217	100%

This population is as sourced from the 2025 records of the industrial Training Fund (ITF) South-East Zonal Office and from ministry of works and housing of each state in south East Nigeria

Sample and Sampling Techniques

The total sample size for this study was 393 respondents, which included 236 trainees selected from a population of 608, 139 Contractors from Construction companies registered with ministry of works and housing selected from a population of 217, and 18 representatives from training centres

The sample size for the study was determined using Cochran's formula for estimating proportions, which is appropriate when the population is known and finite. Cochran's formula for an infinite population is expressed as:

$$n_0 = \frac{Z^2 p(1-p)}{e^2}$$

Where:

n_0 = initial sample size for an infinite population

Z = z-score corresponding to the desired confidence level (1.96 for 95% confidence level)

p = estimated proportion

e =margin of error (0.05 or 5% was used for this study)

Substituting the values:

$$n_0 = \frac{1.96^2 \times 0.5(1-0.5)}{0.05^2} = \frac{3.8416 \times 0.2}{0.0025}$$

Since the populations of trainees, training centres, and builders are finite, the finite population correction formula was applied:

$$n = \frac{n_0}{1 + \frac{n_0 - 1}{N}}$$

Where N is the population size.

Trainees (N=608)

$$n = \frac{\frac{384.16}{1 + \frac{384.16 - 1}{608}}}{1 + 0.6301} = \frac{384.16}{1.6301}$$

Trainees =236

Training Centres (N=18)

$$n = \frac{\frac{384.16}{1 + \frac{384.16 - 1}{18}}}{1 + 21.2867} = \frac{384.1}{22.286}$$

Training centers =18

Contractors (N=217)

$$n = \frac{\frac{384.16}{1 + \frac{384.16 - 1}{217}}}{1 + 1.7662} = \frac{384.16}{2.7662}$$

Contractors = 139

Table 4 Summary of Sample Sizes

Population Group	Population Size(N)	Sample Size(n)
Trainee	608	236
Training Centres	18	18
Contractors	217	139
Total		393

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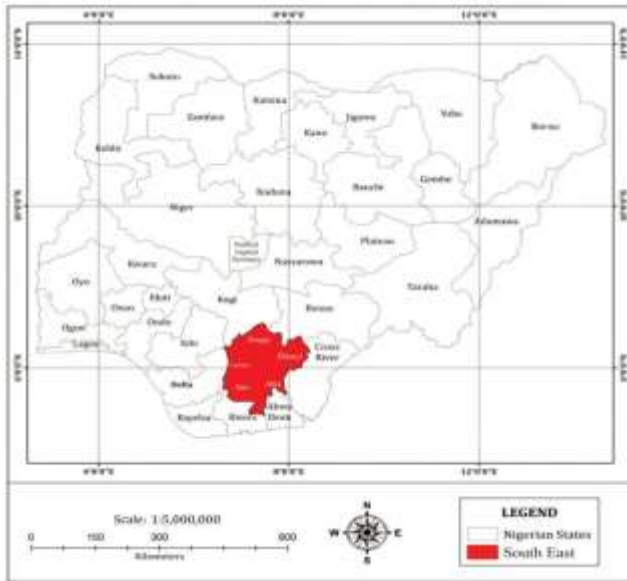


Figure 1. Map of Nigeria showing the study area(South East States).

(Source: Office of the Surveyor General Ebonyi State, 2025).



Figure 2. Map of South East States, Nigeria showing the study area.

(Source: Office of the Surveyor General Ebonyi State, 2025).

SN	Items	5 (VHL)	4 (HL)	3 (ML)	2 (LL)	1 (VLL)	Σf	Σfx	RII	Ranking
1	informal apprenticeship systems in training artisans	160	120	70	30	13	393	1563	0.796	1st
2	Competency level of available skilled artisans	150	115	75	35	18	393	1523	0.775	2nd
3	Adequacy of skilled artisans relative to construction demand	145	110	80	38	20	393	1491	0.759	3rd
4	Access to formal technical/vocational training for artisans	135	115	78	40	25	393	1474	0.750	4th
5	Availability of skilled artisans (bricklayers, carpenters, electricians)	140	105	85	38	25	393	1476	0.751	5th
6	Retention rate of skilled artisans in the construction sector	120	110	90	45	28	393	1428	0.727	6th
7	Migration of skilled artisans to other regions/countries (brain drain)	115	105	95	45	33	393	1411	0.718	7th
8	Availability of certified machine operators for site equipment	110	100	95	50	38	393	1373	0.699	8th
9	Willingness of youths to take up artisan trades	105	95	100	50	43	393	1361	0.693	9th
10	Wage competitiveness for skilled artisans	100	95	100	55	43	393	1353	0.689	10th

“Assessment of the Current Level of Skilled Manpower Supply in the Building Construction Sector of South-East Nigeria”

The	11	Quality of training received by current skilled artisans	95	100	95	55	48	393	1338	0.681	11th
	12	Government support for artisan skill development and training	90	95	100	58	50	393	1326	0.675	12th
	13	Impact of aging workforce on availability of skilled artisans	85	95	105	58	50	393	1314	0.669	13th
	14	Availability of construction-specific training institutions in the region	80	90	110	63	50	393	1296	0.660	14th
	15	Availability of continuous professional development programs for artisans	75	90	115	63	50	393	1284	0.653	15th

interpretation of Table 5 indicates that informal apprenticeship systems are the most influential factor in sustaining skilled manpower supply in South-East Nigeria (RII = 0.796), highlighting the dominant role of traditional training. This is followed by the competency of available artisans (RII = 0.775), adequacy of skilled workers relative to demand (RII = 0.759), and the availability of core trades such as bricklayers, carpenters, and electricians (RII = 0.751). Access to formal technical and vocational training (RII = 0.750) also supports workforce capacity, emphasizing the importance of structured training.

Workforce stability factors, including retention rates (RII = 0.727) and migration to other regions or countries (RII = 0.718), moderately influence manpower supply, while availability of certified machine operators (RII = 0.699) and youth

participation in artisan trades (RII = 0.693) point to emerging challenges in specialized skills and recruitment.

Lower-rated factors reveal institutional and systemic weaknesses, such as limited continuous professional development programs (RII = 0.653), insufficient construction-specific training institutions (RII = 0.660), and weak government support for skill development (RII = 0.675). Additional concerns include the aging workforce (RII = 0.669), variable quality of artisan training (RII = 0.681), and wage competitiveness (RII = 0.689), highlighting gaps in sustaining a skilled, motivated, and future-ready construction workforce.

HO1: There is no significant difference in the mean perception on the level of skilled manpower supply among artisans, contractors, and training centers in the South East.

Table 6: ANOVA Mean Ratings Perception on the Level of Skilled Manpower Supply among Artisans, Contractors, and Training Centers in the South East

Sources of Variable	Sum of Squares	DF	Mean Square	F-Ratio	p-value	Remark
Between Groups	.269	2	.134	.393	.676	Not significant
Within Groups	50.271	174	.342			
Total	50.540	176				

The result of data analysis presented in Table 6 reveals that no significant difference in the mean perception on the level of skilled manpower supply among artisans, contractors, and training centers in the South East. This is because the grand mean of F-ratio (2, 174) is .393 and P-value (.676) is greater

than the stipulated 0.05 level of significance. Therefore the null hypothesis is not rejected.

CONCLUSION

The study reveals that the current supply of skilled manpower in the building construction sector of South-East Nigeria is heavily reliant on informal apprenticeship systems, which, while effective for basic hands-on training, are insufficient for modern construction demands. The competency and availability of artisans, adequacy relative to demand, and access to formal training were identified as key factors

influencing manpower supply. Challenges such as limited vocational training infrastructure, inadequate government support, migration of skilled workers, low youth participation, and an aging workforce threaten the long-term sustainability of the sector. The consensus among artisans, contractors, and training centres confirms that systemic weaknesses, rather than individual factors, largely account for the gaps in workforce readiness. Without interventions to improve formal training, skill certification, and workforce development, the region risks a persistent shortage of skilled artisans, potentially affecting construction quality, efficiency, and productivity.

Recommendations

Based on the findings of this study, the following recommendations are proposed to enhance the supply and quality of skilled manpower in the building construction sector of South-East Nigeria:

1. Expand and modernize technical colleges, training centres, and skill acquisition programs to provide artisans with exposure to advanced construction techniques, digital tools, and modern equipment.
2. Develop structured apprenticeship curricula with formal certification and assessment standards to ensure uniform skill quality and industry readiness.
3. Implement sustainable policies for artisan skill development, including adequate funding for training infrastructure, incentives for continuous professional development, and measures to retain skilled workers.
4. Introduce awareness campaigns, scholarships, and incentives to encourage youth participation in construction trades, highlighting the value and career prospects of skilled artisan work.
5. Provide competitive wages, benefits, and career advancement opportunities to reduce migration of skilled workers to other regions or countries.
6. Establish standardized professional certification and licensing frameworks to validate skills, strengthen employer confidence, and ensure quality and safety in construction practices.

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