

**THE IMPACT OF SKILLED LABOUR SHORTAGES ON CONSTRUCTION
WORKS IN EDO STATE**



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2025

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BEING A PROJECT SUBMITTED TO THE DEPARTMENT OF QUANTITY
SURVEYING, FACULTY OF ENVIRONMENTAL SCIENCES, UNIVERSITY OF
BENIN, BENIN CITY, NIGERIA.

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE
DEGREE OF BACHELOR OF SCIENCE (B.SC.) IN QUANTITY SURVEYING

APRIL, 2025

DECLARATION

I declare that this project is an original work carried out by me, **Joseph Emeka Nwangwu** with Matriculation Number **ENV1906089** in the Department of Quantity Surveying, Faculty of Environmental Sciences, University of Benin, Benin City.

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CERTIFICATION

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DEDICATION

I wish to dedicate this work to God Almighty for His endless favour and grace upon my life.

ACKNOWLEDGEMENTS

First and foremost, I give thanks to the Almighty God for granting me the strength, wisdom, and perseverance to reach this significant milestone. I extend my sincere appreciation to my project supervisor and Head of Department, Dr. T. S. Fawale, for his intellectual guidance, patience, and invaluable contributions throughout this research. His constructive feedback and unwavering support played a crucial role in refining and enhancing the quality of this study.

I am also profoundly grateful to the Department of Quantity Surveying for providing me with a solid academic foundation and the necessary resources to successfully complete this research. The knowledge and experiences gained throughout my studies have been instrumental in shaping my academic and professional growth. My heartfelt appreciation goes to all my esteemed lecturers including, Dr. T. S. Fawale (HOD), Prof. C. P. Ogbu, Prof. V. N. Okorie, Mr. G. A. Sanni, Mr. E. M. Osazuwa, Mr. M. O. Imafidon, and Bldr. F.M. Idienumah. Their dedication to academic excellence and commitment to imparting knowledge have greatly contributed to my growth and understanding in this field.

Additionally, I recognize and appreciate the non-teaching staff of the department for their assistance and support throughout my academic journey. Their contributions, though often behind the scenes, have been invaluable. I am immensely grateful to all the respondents who participated in this research. Their willingness to provide valuable information and insights contributed significantly to the success of this study.

Furthermore, special appreciation goes to my colleagues for their encouragement, collaboration, and shared experiences throughout this journey. Their support has made this academic pursuit both enriching and memorable. And also, to my beloved parents, Mr and

Mrs Nwangwu, and siblings for their unconditional love, and unrelenting support which have been very indispensable throughout my academic journey.

Thank you all for being a vital part of this endeavour.

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ABSTRACT

The persistent shortage of skilled labour has emerged as a critical challenge to the Nigerian construction industry, undermining its ability to deliver projects within the planned time, cost, and quality parameters. This study investigates the extent and nature of skilled labour shortages in Benin City, Edo State, with four main objectives: to determine the availability of skilled labour, identify the major causes of the shortage, assess its effects on project performance, and recommend strategies for mitigation. A survey research design was employed, targeting Architects, Builders, Engineers, Quantity surveyors and Project managers. A total of 200 questionnaires were administered, and 127 valid responses were analysed. Data analysis involved descriptive statistics, particularly mean item score and ranking, to establish the priority of issues identified under each objective. Findings revealed that the availability of skilled labour in the study area is low, with migration of skilled workers (Mean = 4.40), inadequate training (Mean = 4.20), and poor working conditions (Mean = 4.10) emerging as the most critical causes. Lesser causes include technological changes (Mean = 2.80) and limited career advancement opportunities (Mean = 2.70). The shortage significantly impacts project performance, with the most severe effects being project delays (Mean = 4.50), cost overruns (Mean = 4.30), and reduced quality standards (Mean = 4.00), while increased supervision costs (Mean = 2.90) and difficulty meeting safety standards (Mean = 2.80) are of lower concern. In addressing the problem, respondents ranked improved vocational and technical training programmes (Mean = 4.60), better welfare and working conditions (Mean = 4.40), and the adoption of modern construction technologies (Mean = 4.20) as the most effective strategies. Less-favoured measures included the

importation of foreign skilled labour (Mean = 2.70) and short-term outsourcing (Mean = 2.50). The study concludes that sustainable solutions must focus on long-term workforce development, competitive employment conditions, and the integration of appropriate technologies. These measures, if implemented, have the potential to significantly improve workforce capacity, enhance project delivery, and strengthen the competitiveness of the construction industry in Benin City and other similar contexts.

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Construction can be identified as a labour intensive industry which carries heavy reliance upon the skills of labourers. Skillful labor force is one of the vital elements for the continuity and successful implementation of construction projects. This is confirmed by Gudienė *et al.* (2013) who considered skilled labour to be one of the critical factors of production in construction projects. As activities on site are largely reliant on skilled workforce (Mackenzie *et al.*, 2000), any shortage has a negative implication for the construction industry. Nigeria as a nation is fast growing and its infrastructural demands requires skilled workers. There is need for younger workers to be trained and equipped to effectively replace older skilled workers. Artisans, Craftsmen, Technicians, Technologist and experts need continuous improvement in areas relating to technical, enterprise, managerial and other forms of skills for the construction industry to be successful. In a survey observed by Windapo (2016) in which employers of labour were asked about the possible impact of talents shortages on their companies, 82% concluded that it would lessen their competitiveness and productiveness, at the same time as 75% agreed that it might extensively lessen their ability to offer essential services to her customers. Ishaku & Olalere (2024) defined skilled workers as any character who has special knowhow and experience to nearly carry out precise project operations within the construction industry. Similarly, Musa, (2016) outline skilled workers as a person with a needful practical knowledge to undertake task or challenge given to him/her in the production industry. In the construction industry, skilled workers are inclusive of block/bricklayer, carpenters, painters, electricians, welders, plumbers, plant operator amongst others form a huge part of the labour force (Akinluyi & Adeleye, 2013). It is a growing trend for youths to desist from acquiring skills in pursuit for a university degree. Many are of the

the opinion that skills are for the uneducated or less privileged. Due to this rising trend, skilled work is often looked down upon and the pay isn't attractive. This creates a gap of educated skill workers- workers formally trained by a recognized institution. Nigeria is a developing country and future projects and infrastructures will need the services of formally trained artisans, welders, painters, and plumbers. The power of education is recognized in Nigeria making it difficult for the uneducated workers to command high pay. Conference, trainings and workshops can help improve the status of such uneducated workers. The knowledge gained would go a long way in improving the skills and experience of construction workers in Nigeria.

As new developments arise and new methods and technologies continue to emerge, there is a need for constant and continuous learning, training, and upskilling of construction workers Korkmaz (2018). Although there are no statistics to show whether there is a shortage of skilled craftsmen in the Nigerian construction industry, experts and stakeholders in the industry believe that there is a shortage of skilled trades (Gunasekera & Chong, 2018; Almarshoudi & Suresh, 2018). This research is conducted in response to concerns from stakeholders about the perceived shortage of skilled workers and the impact that this shortage may have on the industry's ability to meet the growing residential and commercial demand for construction (Hosseini *et al.*, 2016). This study, therefore, assesses the state of the Nigerian construction industry with respect to skilled labor shortage, its prevalence, causes, and effects on building project delivery (Ding *et al.*, 2017; Suresh *et al.*, 2017).

1.2 Statement of the Research Problem

The construction industry is a heavy-duty industry requiring lots of laborious activities and manpower. Moreso, construction projects are permanent structures meaning that errors made are difficult to reverse and care should be made to avoid all possible errors. This can only be possible by the use of skilled workers. Unfortunately, there has been low supply of skilled

workers around the world. For instance, Chen et al. emphasize that the construction industry is experiencing a notable shortage of skilled labor, which is closely linked to technological advancements and the need for professionalization within the workforce to address these gaps effectively (Chen *et al.*, 2023). This assertion is echoed by Cerić and Ivić, who identify skilled labor shortages as a critical issue in the global construction labor market, resulting in increased project costs and poor-quality performance (Cerić & Ivić, 2020). This low supply or shortage occurs for a variety of reasons which the study attempts to uncover. Skilled workers are the bedrock of any production enterprise as they are skilled in different area of the industry starting from bricklayers/masonry, carpenters/jointers, iron benders, painters, electricians, plumbers, machine operators and so on. Okuntade, (2014) determined that no correct statistics of change skill-gap exists in the construction industry, however, it doesn't deny the fact that there exists low skill gap within the construction industry. In the United States, one in five of workers is 55 years. Additionally, the median age of a construction worker is 42 years. This goes on to confirm that young workers, which should replace the older ones are few. Understanding the underlying causes for such skilled labour shortages is crucial to reducing such shortages. It is the purpose of this research to determine the cause of such shortages, and provides techniques to reduce such shortages.

1.3 Research Questions

The research questions include;

1. What are the causes of skilled labour shortages on construction works in Edo State?
2. What effects do skilled labour shortages have on construction works in the study area?
3. What are the strategies for mitigating skilled labour shortages on construction works in in the study area?

1.4 Aims and Objectives of the Study

The aim of this study is to determine the impact of skilled labour shortage on construction projects in Edo state, with a view to enhancing the efficiency of project delivery.

The objectives are to;

1. Examine the causes of skilled labour shortages on construction works in Edo State;
2. Assess the effects of skilled labour shortages on construction works in Edo State;
3. Investigate the strategies for mitigating skilled labour shortages on construction works in the study area.

1.5 Scope of the Study

The area of coverage for this research work is limited to the construction industry in Edo State. The study focuses on registered construction professionals who play critical roles in project delivery. These include architects, civil and structural engineers, builders, quantity surveyors, project managers and contractors. These categories were selected because of their central involvement in the design, supervision, execution, and technical operations of construction projects, making them the most appropriate population for investigating the challenges of skilled labour shortages within the state.

1.6 Significance of the study

The study aims to identify the causes for skilled labour shortage in the Nigerian construction industry. The findings of the study would be useful in reducing the gap of skill labour shortage. The study seeks to discover the area of skills shortage in the Edo State construction industry therefore providing opportunities for career development and boosting of the GDP of the state.

1.7 Definition of Terms

Skill: is an innovative ability of a person to carry out an effective task at certain stage in the construction industry.

Skilled worker: is any worker who has unique skill, training, information and level in carry out particular task in construction industry.

Shortage: is a situation of not having sufficient skilled workers in the construction industry.

Skill shortage: is a situation where demands for workers for a particular task or occupation is greater than the supply of personnel who are qualified, available and willing to work.

Construction Industry: is a company that specialized in the construction of houses, road bridges, dams and infrastructural facilities for the comfort of mankind.

CHAPTER TWO

LITERATURE REVIEW

2.1 Preamble

This chapter reviews relevant literature on skilled labour shortages in the construction industry. It covers the concept and nature of skilled labour, examines documented causes and effects of shortages, and explores strategies for mitigation. The review also highlights findings from related empirical studies to provide context for the present research and identify gaps it seeks to address.

2.2 Concept of Skilled Labour Shortages in Construction

The concept of skilled labor in construction is pivotal to the industry's success. Mackenzie et al. (2000) emphasized that construction activities heavily depend on a skilled workforce, underscoring the essential role of skilled labour in achieving project objectives (Arnholtz & Wright, 2023). This assertion is corroborated by (Hussain *et al.*, 2020), whose empirical research identified skilled labour as a critical success factor in construction projects, highlighting its impact on overall project performance (Hussain *et al.*, 2020). The definition of skilled labour has evolved, with Musa (2016) characterizing skilled workers as individuals possessing the practical knowledge necessary to perform specific tasks within the production industry (Chen *et al.*, 2023). Ishaku and Olalere (2024) further expanded this definition to encompass the special expertise and experience required for executing precise operations in the construction sector, illustrating the multifaceted nature of skilled labour (Hussain *et al.*, 2020).

2.3 Evidence of Skilled Labour Shortages

A notable shortage of skilled labour has been documented, impacting productivity, safety, and project timelines across various regions (Sokas *et al.*, 2019; Albalawi *et al.*, 2023; Juricic *et al.*, 2021). This shortage has been attributed to several factors, including an aging workforce, inadequate recruitment strategies, and the cyclical nature of the construction industry, which often deters potential entrants due to perceived job instability (Welfare *et al.*, 2021; Al-Bayati *et al.*, 2020).

(Okuntade 2014) noted the lack of precise statistics regarding skill gaps in the Nigerian construction industry but confirmed significant shortages through qualitative research. This finding aligns with Windapo's (2016) survey, which indicated that 82% of employers reported reduced competitiveness and productivity due to talent shortages, while 75% experienced diminished capacity to deliver essential services (Ikechukwu, 2019). Internationally, studies in the United States construction sector revealed that one in five workers is over 55 years old, with a median age of 42 years, indicating an aging workforce problem (Hafez, 2014).

The implications of this skilled labour shortage are profound. For instance, the lack of skilled workers has been linked to increased project costs and schedule overruns, as companies struggle to find qualified personnel to meet project demands (Al-Bayati *et al.*, 2020). Furthermore, the safety performance of construction projects is adversely affected by the shortage of skilled craft workers, leading to higher risks of accidents and associated costs (Karimi *et al.*, 2016). This correlation underscores the necessity of addressing the skilled labour gap not only for economic reasons but also for ensuring worker safety and project integrity (Al-Bayati *et al.*, 2020).

2.4 Causes of Skilled Labour Shortages

Several researchers have attempted to outline the different underlying causes of labour shortages in the construction industry. The causes and sources from various authors are presented in the table 2.1.

Table 2.1: Causes of Skilled Labour Shortages

S/N	Causes of Skilled Labour Shortages	Sources
1	Migration of Skilled Workers	Hassan, Ahmed, Ibrahim and Sani (2019); International Labour Organization (2019); Abiola-Falemu, Funmilola, Oseghale and John. (2015)
2	Outdated Training Curricula	Windapo, Abimbola(2016); Adebayo, Kehinde (2021); World Bank. (2020)
3	Aging Workforce	Cunha, Maria, Melo, Ricardo, and Silva, Pedro (2019); Hassan, Ahmed, Ibrahim and Sani (2019); Oseghale, Abiola-Falemu, Funmilola and John. (2015)
4	Poor Working Conditions	Adebayo, Kehinde (2021); Oseghale, Abiola-Falemu, Funmilola and John (2015); Nigerian Labour Congress. (2020)
5	Rapid Technological Changes	Cunha, Maria, Melo, Ricardo, and Silva, Pedro (2019); Hassan, Ahmed, Ibrahim and Sani (2019); International Labour Organization. (2019)
6	Low Youth Participation	Windapo, Abimbola (2016); Oseghale, Abiola-Falemu, Funmilola and John (2015); World Bank. (2020)
7	Limited Career Advancement Opportunities	Windapo, Abimbola (2016); Fairchild and Mikuska (2021); Okonkwo, C. (2020); Chen, Guo and Xie (2023).
8	Poor Wages and Lack of Incentives	Hassan, Ahmed, Ibrahim and Sani (2019); International Labour Organization (2020); Windapo, Abimbola. (2016)
9	Limited Access to Training Facilities	Oseghale, Abiola-Falemu, Funmilola, and John (2015); Windapo, Abimbola (2016); Nigerian Bureau of Statistics. (2021)
10	Negative Perception of Construction Careers	Windapo, Abimbola (2016); Oseghale, Abiola-Falemu, Funmilola and John (2015); World Bank. (2020)
11	Job Insecurity	Hassan, Ahmed, Ibrahim and Sani (2019);

12 Lack of Vocational Training Programs	Oseghale, Abiola-Falemu, Funmilola and John (2015); Adebayo, Kehinde. (2021) Oseghale, Abiola-Falemu, Funmilola and John (2015); Windapo, Abimbola (2016); Adebayo, Kehinde. (2021)
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2.4.1 Limited Career Advancement Opportunities

One of the critical factors driving shortages of skilled labour in construction is the lack of structured career advancement opportunities. Unlike formal professions such as engineering or medicine, construction trades are often seen as “dead-end” jobs, with little scope for upward mobility (Fairchild & Mikuska, 2021). In many developing countries, including Nigeria, artisans and craftsmen remain confined to low-skilled, low-paying roles, with limited pathways to supervisory or managerial positions. This lack of progression opportunities discourages new entrants and increases attrition, as workers seek more rewarding careers in other sectors (Okonkwo, 2020).

Globally, Chen, Guo, and Xie (2023) argue that industries unable to institutionalize professional development suffer from chronic shortages, as workers migrate to occupations that offer clearer trajectories for promotion and skills recognition. In Nigeria, the situation is worsened by the informal nature of many construction trades, which reduces opportunities for certification, training, or entrepreneurship support (Windapo, 2016). For Edo State, this challenge is acute: many artisans, despite decades of experience, remain in the same job category, earning modest wages with no prospects of advancement. This lack of recognition reduces the sector’s attractiveness, particularly among younger generations who value career growth and prestige.

2.4.2 Poor Working Conditions

Poor working conditions are one of the most persistent factors behind the shortage of skilled labour in Nigeria's construction industry, and the issue is particularly evident in Edo State. Construction work is naturally strenuous, but in Nigeria the burden is compounded by inadequate welfare provisions, unsafe environments, and irregular payment systems that make the sector unattractive. Scholars have consistently identified poor conditions of service as a major reason why artisans abandon construction work for alternative livelihoods such as transportation, small-scale trading, or migration abroad (Oseghale, Abiola-Falemu, & Oseghale, 2015; Hassan & Ibrahim, 2019). In Edo State, where urbanisation has increased demand for housing and infrastructure, the inability to retain workers under such poor conditions has worsened shortages and delayed project delivery.

Safety on construction sites is one of the most pressing concerns. Many contractors do not provide personal protective equipment such as helmets, boots, or gloves, expecting workers to procure these items themselves. For low-income artisans, this is often unrealistic, leading to high exposure to workplace hazards. Unlike in developed countries, where safety enforcement and insurance schemes are standard, construction in Edo State remains unsafe, pushing skilled workers toward sectors perceived as less hazardous (Adebayo, 2021). The absence of proper welfare facilities such as potable water, rest areas, or first-aid services on sites further compounds these risks, making construction unattractive to new entrants and contributing to a shrinking labour pool.

Irregular and delayed payment is another common complaint among artisans in Edo State. Workers often face wage delays, with payment tied to project completion rather than regular intervals. For families reliant on daily or weekly income, such instability creates hardship and undermines trust in employers. Hassan and Ibrahim (2019) emphasized that delayed wages

lead to high attrition rates, as workers leave sites to pursue other opportunities. Contractors in Benin City frequently experience disruptions when artisans abandon projects mid-way over payment disputes, which increases costs and contributes to widespread project delays.

Working hours in construction also discourage retention. Artisans often work long shifts in harsh conditions without adequate rest breaks or overtime compensation. Combined with exposure to heat, dust, and rain, these extended hours result in fatigue, injuries, and declining productivity. Adebayo (2021) noted that such strain discourages younger generations from considering construction as a viable career path, as they increasingly prefer sectors with more predictable schedules and better work–life balance. In Edo State, this perception contributes to the stigma against vocational careers and reduces apprenticeship enrolment, weakening the pipeline of future workers.

The absence of formal welfare systems such as pensions, health insurance, and long-term contracts further compounds the problem. Most construction workers in Edo State are employed casually on project-by-project bases, with no benefits once the work is completed. This job insecurity makes it difficult for workers to plan long-term careers in construction, encouraging frequent job-switching and migration into other industries (Windapo, 2016). For employers, this translates into constant labour turnover and the need to repeatedly recruit and train workers, reducing overall productivity.

Poor working conditions also damage the social image of construction work. The sector is widely regarded as dirty, insecure, and exploitative, discouraging families from supporting vocational training. As Windapo (2016) observed, unless conditions are improved, the sector will struggle to attract talent and vocational training will remain stigmatized. In Edo State, this perception has weakened the apprenticeship system, which historically served as the

main avenue for passing skills from older artisans to younger workers. Without a steady inflow of apprentices, the shortage of skilled labour intensifies as older workers retire.

The combination of unsafe environments, delayed wages, excessive working hours, and lack of welfare provisions make construction unattractive to both current workers and new entrants. For Edo State, this results in project delays, inflated costs, and declining quality as contractors turn to less skilled substitutes. Addressing these issues is therefore critical to improving the stability of the workforce and ensuring that the state's growing demand for infrastructure can be met effectively.

2.4.3 Migration of Skilled Workers

Migration of skilled workers has become one of the most important drivers of labour shortages in construction industries worldwide, and the impact is strongly felt in Nigeria and Edo State. Migration occurs both internally, when artisans and professionals leave smaller cities for more industrialised centres, and externally, when they move to other countries in search of better pay, security, and working conditions. Studies have shown that rural–urban migration alone can reduce the availability of skilled labour in local industries by up to 45 percent, as workers abandon less lucrative markets for booming construction hubs where wages and demand are higher (Cunha, Melo, & Silva, 2019). In Europe, for instance, construction labour migration has created imbalances, benefiting destination countries but leaving source regions with critical shortages (Arnholtz & Wright, 2023). This dynamic is mirrored in Nigeria, where both internal and international migration are steadily eroding the pool of skilled construction labour.

A major feature of migration in the Nigerian construction sector is the flow of skilled workers from less industrialized states to metropolitan centers such as Lagos, Abuja, and Port Harcourt. These urban hubs attract labour because they host larger projects, offer better

wages, and present more consistent employment prospects. As Hassan and Ibrahim (2019) argued, weak local conditions such as poor pay and irregular contracts act as push factors, while the concentration of higher-value projects in metropolitan areas functions as a strong pull factor. Edo State has been particularly affected by this trend, as contractors in Benin City frequently report difficulties in hiring competent bricklayers, carpenters, and electricians, especially during periods of peak construction activity. The imbalance between supply and demand forces firms to compete aggressively for the few skilled hands available, driving up wages and project costs while increasing the likelihood of delays.

International migration has added a new layer of complexity to the shortage of construction workers in Edo State. In recent years, Nigerian artisans have increasingly sought work abroad, particularly in Canada, the United Kingdom, and the Middle East. These regions offer significantly higher wages and more structured welfare benefits compared to what is available locally. Okonkwo (2020) argued that migration is often driven not only by wages but also by job security, access to training, and the perception of higher status associated with working in foreign markets. For example, Nigerian welders and plumbers who migrate to Saudi Arabia or the United Arab Emirates can earn salaries several times higher than what they would make in Edo State, while also benefiting from insurance packages and long-term contracts. Such opportunities inevitably attract skilled workers, leaving local contractors to fill the gaps with less experienced labour. In practice, this has translated to frequent complaints in Benin City about unfinished or delayed housing projects due to the unavailability of competent artisans.

The challenge of migration is not limited to artisans; professionals such as architects, engineers, and quantity surveyors are also leaving Edo State for other Nigerian cities and overseas destinations. Many graduates of the University of Benin, for example, relocate after their studies to Lagos or Abuja, where their skills command better recognition and pay. This

form of professional migration deprives the local industry of critical human capital needed to supervise projects, manage contracts, and maintain quality standards. The combined loss of both artisans and professionals creates a twofold crisis: the shortage of hands-on skilled workers and the lack of technical managers to oversee construction projects.

Several socioeconomic factors drive this outflow of workers. Poor wages remain the most obvious reason, with many Edo State artisans earning less than their counterparts in Lagos or foreign markets. In addition, poor working conditions — including inadequate site safety, lack of insurance, and delayed wages — push many workers to seek opportunities elsewhere (Oseghale, Abiola-Falemu, & Oseghale, 2015). The absence of clear career advancement opportunities also reduces motivation for artisans to remain within Edo State. Without defined pathways to supervisory or managerial roles, skilled workers often perceive construction work as a dead-end job, encouraging them to migrate to industries or regions where progression appears more attainable. These factors combine to create a steady drain of labour out of Edo State.

The consequences of migration for the construction industry are profound. Contractors face rising costs as they compete for scarce workers, and project timelines are frequently extended due to the difficulty of assembling complete teams of skilled artisans. In some cases, unskilled workers are brought in to fill the gaps, which compromises project quality and increases the need for costly rework. Furthermore, the exodus of experienced workers reduces the availability of mentors for apprentices, weakening the traditional systems through which construction skills are transferred to younger generations. In the long term, migration perpetuates a cycle of shortages that will continue to undermine the sector unless deliberate interventions are introduced.

Policy responses must therefore focus on both retention and attraction. At the state level, Edo can improve retention by offering competitive wages, enforcing better working conditions, and supporting contractors who provide welfare benefits such as pensions and health insurance. Nationally, stronger vocational education systems and structured certification programs are needed to elevate the status of artisans and reduce the desire to migrate. As Windapo (2016) noted, the informal nature of many Nigerian construction trades lowers recognition and pay, which fuels migration. By formalizing training and certification, the sector can improve both the professional identity and the income of artisans. At the international level, bilateral agreements with destination countries could ensure that migration is managed in ways that do not excessively deplete Nigeria's workforce. Such agreements could require destination countries to invest in training programmes in Edo State and across Nigeria, thereby replenishing the supply of skilled workers locally.

Migration of skilled workers thus represents both an opportunity for individuals and a critical challenge for Edo State's construction industry. While it improves the livelihoods of workers and their families, it leaves behind a fragile local workforce that struggles to meet the demands of a growing construction market. Unless urgent measures are taken to address the push factors driving workers away and to make Edo State's construction industry more attractive, the shortages created by migration will continue to undermine project delivery, inflate costs, and compromise the quality of infrastructure in the state.

2.4.4 Poor Wages and Lack of Incentives

Poor wages and the lack of incentives have long been identified as fundamental causes of skilled labour shortages in the construction sector, and the problem is particularly acute in Nigeria and Edo State. Construction workers are often paid less than their counterparts in other industries, despite the physically demanding nature of their jobs and the risks associated

with construction sites. Compared with workers in oil and gas, telecommunications, or even certain manufacturing sectors, artisans in construction earn relatively modest wages, making the industry less attractive to both current and potential workers (Hassan & Ibrahim, 2019). In Edo State, where the cost of living has risen steadily in urban centres such as Benin City, the disparity between construction wages and those in other sectors discourages workers from remaining in construction. The result is a steady outflow of skilled workers into alternative occupations or migration to regions that offer better pay.

The problem is further compounded by the irregularity of payment in the industry. Many artisans report delays in receiving their wages, with some having to wait weeks or months for compensation after completing their tasks. Oseghale, Abiola-Falemu, and Oseghale (2015) highlighted that such practices erode worker morale and contribute to high attrition rates. In Edo State, it is common for workers to abandon sites midway through projects when payments are delayed, forcing contractors to scramble for replacements and creating further disruptions. This unreliability not only reduces the attractiveness of construction jobs but also undermines trust between workers and employers, making it difficult for firms to retain a stable and committed workforce.

Beyond wages, the absence of incentives such as health insurance, pensions, and training opportunities also contributes to labour shortages. Unlike formal employees in sectors such as banking or oil and gas, construction workers in Edo State typically lack access to structured welfare systems. They are rarely provided with health coverage, accident compensation, or retirement benefits, leaving them vulnerable to financial instability in times of illness or injury (Windapo, 2016). The absence of long-term incentives makes construction appear as a temporary and insecure occupation rather than a sustainable career path. For younger people evaluating their options, the lack of benefits reinforces the perception that construction is a low-status job with little future potential, further reducing new entrants into the workforce.

The issue of inadequate wages also has implications for the quality of construction work. Contractors often find that low pay discourages commitment and reduces productivity, as workers take on multiple jobs simultaneously to supplement their income. This divided attention can result in mistakes, delays, and rework, ultimately increasing project costs. Adebayo (2021) observed that competitive remuneration is essential not only for attracting workers but also for ensuring the quality and efficiency of construction projects. In Edo State, where the demand for housing and infrastructure continues to rise, failure to provide fair wages and incentives undermines the industry's capacity to deliver projects on time and to acceptable standards.

The shortage of skilled workers caused by poor wages and lack of incentives has created a cycle of rising costs for contractors, as they are forced to pay higher rates to secure the few experienced artisans who remain in the sector. While this may temporarily increase earnings for some workers, it does not solve the structural problem of low overall compensation and absent welfare systems. Until the industry adopts more competitive pay structures and introduces incentives such as pensions, training, and health coverage, Edo State's construction sector will continue to struggle with labour shortages and unstable project delivery.

2.4.5 Low Youth Participation

Low youth participation in construction trades is one of the most pressing causes of skilled labour shortages in Nigeria, and the situation is clearly evident in Edo State. Despite high levels of unemployment among young people, few are willing to pursue careers as artisans, technicians, or craftsmen. The construction sector is widely perceived as unattractive, characterised by strenuous physical labour, irregular pay, and limited prospects for advancement. This perception has created a generational gap in the industry, where the

majority of skilled workers are middle-aged or older, with very few younger entrants prepared to replace them as they retire (Windapo, 2016). The result is a shrinking labour pool that threatens the sustainability of the sector, particularly in states such as Edo where urbanisation is fuelling a steady demand for housing and infrastructure.

Cultural and societal attitudes play a major role in shaping the low participation of youth in construction. In Nigeria, vocational training and artisan work are often stigmatised as low-status careers compared to university education and white-collar professions. Parents in Edo State frequently encourage their children to seek professional roles in law, medicine, banking, or public administration, while discouraging vocational pathways. Oseghale, Abiola-Falemu, and Oseghale (2015) observed that this stigma reduces enrolment in technical training institutions and apprenticeships, which are the primary channels for developing new skilled workers. As a result, many young people, even when unemployed, prefer to remain outside the workforce or pursue small-scale businesses rather than consider construction trades. This has weakened the apprenticeship system that traditionally sustained the flow of new artisans into the industry.

Another factor driving low youth participation is the unattractive nature of working conditions in the construction sector. Long working hours, exposure to harsh environments, delayed wages, and the absence of welfare benefits discourage young entrants who often prefer careers that promise more stability and security. Hassan and Ibrahim (2019) argued that for many young Nigerians, construction work represents not just physical strain but also financial uncertainty. In Edo State, contractors frequently report difficulties in recruiting young apprentices, as potential trainees are wary of conditions on sites and the low likelihood of career progression. The sector's inability to provide structured pathways for advancement means that many young people see little incentive to invest their time in training for jobs that are widely regarded as dead-end occupations.

The limited integration of modern technologies into training further exacerbates the problem. Many young people are highly attracted to careers that allow them to engage with digital tools and contemporary innovations. However, the outdated curricula of vocational institutions in Edo State, combined with the traditional methods used in informal apprenticeships, fail to capture this interest. Windapo (2016) noted that the absence of digital literacy in technical training not only undermines employability but also alienates youth, who might otherwise be motivated by exposure to new technologies. Consequently, the industry struggles to position itself as a modern and rewarding career option, leaving many young people uninterested in construction trades.

The implications of low youth participation are serious for Edo State's construction industry. With the workforce ageing rapidly and fewer young people entering the sector, the shortage of skilled labour will intensify in the coming years. This shortage will drive up project costs, prolong timelines, and compromise quality as contractors are forced to rely on semi-skilled or unskilled labour. More critically, the erosion of intergenerational knowledge transfer threatens the preservation of craft skills that are best learned through direct mentorship. Unless construction careers are rebranded to appeal to young people, Edo State risks facing a long-term deficit in skilled labour that will undermine its capacity to meet infrastructure and housing demands.

2.4.6 Aging Workforce

The aging workforce has emerged as a major contributor to the shortage of skilled labour in construction, with significant implications for productivity, safety, and the transfer of knowledge across generations. Across the globe, many construction industries are characterised by an older demographic of workers, as younger people increasingly avoid physically demanding trades in favour of professional or service-sector jobs. In advanced

economies such as the United States, the average age of construction workers is now over 40, and similar patterns have been observed in Europe and Asia (Cunha, Melo, & Silva, 2019). The same demographic trend is evident in Nigeria, where artisans in trades such as masonry, carpentry, plumbing, and welding are dominated by middle-aged and older individuals who are approaching retirement. The challenge created by this demographic shift is not just a reduction in the number of available workers but also the loss of invaluable tacit knowledge that has traditionally been transferred through apprenticeship systems.

In Edo State, the effects of an aging construction workforce are particularly evident on small- and medium-sized building projects, where contractors often struggle to recruit younger artisans. Site managers frequently report that the majority of competent masons, carpenters, and bricklayers are in their late 40s or 50s, while very few workers in their 20s or 30s are available to take over. This imbalance means that when older workers retire or leave the sector, they are rarely replaced with individuals of comparable skill. The reliance on an older workforce also raises concerns about productivity, as physically demanding construction tasks require strength, endurance, and adaptability to technological innovations. Older workers may not be as able or willing to learn and adopt new technologies, particularly digital tools, creating additional mismatches between available skills and industry requirements (Hassan & Ibrahim, 2019).

One of the key reasons for the aging profile of construction labour in Nigeria is the declining interest of young people in vocational careers. The construction sector is often stigmatised as dirty, physically strenuous, and of low social status compared to white-collar professions. Parents in Edo State frequently encourage their children to pursue university degrees, even when vocational training may provide more immediate job opportunities. As a result, the pipeline of young entrants into construction trades is severely limited. Windapo (2016) observed that this social perception acts as a structural barrier, preventing the renewal of the

workforce and reinforcing the dependence on older, long-serving artisans. The situation creates a generational gap that undermines both the quantity and quality of skilled labour available in the market.

Another factor sustaining the aging workforce problem is the absence of well-structured and attractive apprenticeship programmes. In many parts of Edo State, apprenticeship remains highly informal, dependent on the willingness of older craftsmen to train younger workers. However, because construction trades are perceived as unattractive, many young people prefer to engage in small-scale businesses, transport services, or even remain unemployed rather than commit to lengthy apprenticeships that may not guarantee high earnings. This weakens the intergenerational transfer of skills and results in a shortage of younger artisans who are adequately trained to replace older workers as they retire. The apprenticeship system, which should serve as the primary mechanism for renewing the workforce, is therefore failing to function effectively in the current context.

The dominance of an older workforce also creates broader risks for project delivery in Edo State. Construction is physically demanding, requiring agility, stamina, and often long hours under difficult site conditions. An older workforce is more susceptible to fatigue and occupational health issues, which can reduce efficiency and increase the risk of accidents. As workers age, the probability of injuries or slower recovery times increases, thereby raising safety concerns on construction sites (Adebayo, 2021). For contractors, this translates into lost man-hours, higher insurance costs where coverage exists, and increased project delays. For the state, it means that the industry cannot keep pace with infrastructure demands, particularly as urbanisation and population growth continue to drive demand for new housing and public facilities.

The implications of this demographic imbalance extend beyond immediate shortages. Older workers often serve as repositories of tacit knowledge—skills that are not formally documented but are critical to quality workmanship. When these workers retire or leave the industry without adequately passing on their knowledge, the construction sector loses more than just manpower; it loses decades of experience in craft techniques, problem-solving, and adaptation to local building conditions. The erosion of this knowledge base weakens the quality of future projects and forces contractors to rely increasingly on inexperienced workers, further undermining performance outcomes. In Edo State, this is already evident in the frequent complaints about inconsistent workmanship and the need for rework on residential and commercial building projects.

At the same time, the reliance on an older workforce hampers the adoption of modern construction technologies. New methods such as prefabrication, digital modelling, and automated machinery require workers who are not only physically able but also technologically adaptable. Older artisans often show reluctance to engage with these innovations, either due to limited exposure or resistance to change. This slows down the diffusion of technology across the sector, leaving Edo State's construction industry lagging behind global best practices. Younger workers, who might be more comfortable with digital tools, are underrepresented in the labour force, thereby reinforcing the problem.

The aging workforce is further exacerbated by weak retirement and welfare systems. Many construction workers in Edo State continue working into old age not by choice but by necessity, as they lack pensions or social safety nets. While this prolongs their presence in the industry, it does not solve the shortage problem because these individuals are often unable to perform at optimal levels. Their continued participation masks the severity of the shortage temporarily but leads to inefficiencies and greater long-term risks for project delivery.

Without mechanisms to attract younger entrants while supporting older workers with retirement schemes, the imbalance will continue to deepen.

2.4.7 Outdated Training Curricula

Outdated training curricula remain a central cause of skilled labour shortages in the Nigerian construction industry, and the problem is particularly visible in Edo State. Many vocational institutions, technical colleges, and polytechnics continue to rely on instructional materials and teaching methods that are decades old and no longer reflect the realities of modern construction practice. Courses still emphasise traditional bricklaying, carpentry, and manual surveying, while offering little exposure to digital technologies such as Building Information Modelling (BIM), prefabrication systems, or advanced safety management procedures. As a result, graduates emerge with certificates but without the competencies demanded by today's construction firms, creating a situation where labour is available in quantity but deficient in quality (Windapo, 2016; Adebayo, 2021).

The global construction industry has evolved rapidly, driven by technological change and the need for efficiency and sustainability. In developed economies, vocational curricula are continuously reviewed in consultation with industry stakeholders to ensure that students are exposed to contemporary practices, including modular housing and renewable-energy integration (Cunha, Melo, & Silva, 2019). Nigeria, however, has not kept pace. Hassan and Ibrahim (2019) argue that the training environment in most states remains anachronistic, leaving new entrants unprepared for the demands of construction projects. In Edo State, contractors regularly complain that graduates of technical programmes are unable to use computer-aided design software or digital measurement tools, skills now considered basic in construction projects. Employers are therefore forced either to retrain workers at additional cost or to tolerate low productivity, both of which contribute to labour shortages.

The weakness of the training system is compounded by underfunding and the lack of standardisation across apprenticeship programmes. Many institutions in Edo State operate with inadequate equipment, some still using manuals and workshop tools from the 1980s and 1990s. Apprenticeship, which remains the dominant route for skill acquisition, also lacks uniform standards; the competence of trainees depends largely on the knowledge of the master craftsman they learn from. This produces a pool of workers with uneven skills, making it difficult for employers to find artisans who can meet project requirements consistently (Oseghale, Abiola-Falemu, & Oseghale, 2015). Such inconsistencies slow down project delivery, compromise quality, and force contractors to rely on semi-skilled or unskilled labour when better-trained workers are unavailable.

For Edo State, the implications of outdated curricula are serious. The local industry struggles with project delays and rising costs because graduates often need retraining before they can contribute effectively on site. The international competitiveness of Edo State's artisans is also weakened, since their training does not match global benchmarks. This discourages many youths from enrolling in vocational training in the first place, as technical education is perceived as inferior to university education. The stigma surrounding vocational careers further reduces the inflow of young workers into the industry, thereby intensifying shortages over time.

Addressing these issues requires comprehensive reforms that align education with the realities of the modern construction sector. Curricula must be updated to integrate modern construction technologies and sustainability practices, while technical institutions need better funding to update their equipment and workshops. Collaboration between schools and industry stakeholders would ensure that training remains relevant to current project needs. Standardising apprenticeship systems and introducing certification frameworks could also improve the consistency and reliability of skills across the workforce. By modernising its

training systems, Edo State can reduce its reliance on underprepared graduates and ensure that the next generation of artisans is equipped to meet both local and international demands.

2.4.8 Job Insecurity

Job insecurity is another significant factor responsible for skilled labour shortages in Nigeria's construction industry, and its effects are strongly felt in Edo State. Unlike sectors where employment is structured around long-term contracts or permanent positions, construction work in Nigeria is largely project-based. Workers are recruited for the duration of a project and often dismissed as soon as it is completed, leaving them unemployed until another opportunity arises. This cycle of temporary employment creates instability that discourages workers from remaining in the sector long-term. Hassan and Ibrahim (2019) noted that the absence of job security is one of the most powerful push factors leading artisans to abandon construction work or seek opportunities in industries that promise more consistent income. In Edo State, where construction projects often face funding delays and irregular schedules, workers face even greater uncertainty about their continued employment, which makes the sector unattractive.

The unpredictability of employment in construction has profound social and economic consequences for artisans and their families. Without guaranteed income, many construction workers struggle to plan financially, pay school fees, or meet household expenses. Oseghale, Abiola-Falemu, and Oseghale (2015) argued that the precarious nature of construction jobs makes workers more likely to pursue informal businesses or migrate to more stable occupations such as transportation or security services. In Edo State, this trend is evident as many skilled artisans leave the industry to engage in commercial motorcycle riding, retail trading, or other ventures that offer daily or weekly income. While these alternatives may pay

less in absolute terms, they provide a level of predictability that construction cannot guarantee, thereby pulling skilled labour away from the sector.

The lack of formal contracts and social protections further reinforces job insecurity. In Edo State, most artisans and technicians are hired informally, with agreements often made verbally rather than in writing. Without contracts, workers have no legal recourse when they are dismissed prematurely, underpaid, or denied wages altogether. This informality discourages commitment and contributes to high turnover rates, as workers move frequently between employers in search of slightly better conditions. Windapo (2016) observed that this lack of formalisation in the construction labour market not only reduces retention but also damages trust between contractors and workers, weakening the stability of the workforce.

Seasonal fluctuations in construction activity also exacerbate insecurity. In Edo State, demand for construction workers peaks during the dry season, when projects can proceed uninterrupted, and declines sharply during the rainy season. During these downturns, many artisans are left idle for months, with no income to support themselves or their families. The seasonal nature of work makes construction a risky livelihood, particularly for younger people evaluating career options. Adebayo (2021) noted that industries offering more consistent employment are far more attractive to youths, which helps explain the declining interest of new entrants in construction careers.

The broader effect of job insecurity on the industry is the erosion of workforce stability. Skilled artisans who might otherwise have remained in the sector are discouraged by the constant threat of unemployment and the lack of career progression. Contractors in Edo State often report difficulties in building reliable teams, as workers leave mid-project or decline opportunities due to concerns about future income. This instability increases project costs, prolongs timelines, and undermines quality, as contractors are forced to rely on short-term,

less experienced labour. Unless measures are taken to improve employment security, construction work in Edo State will continue to be seen as an unreliable career path, driving skilled workers into other sectors and perpetuating the cycle of shortages.

2.4.9 Limited Access to Training Facilities

Limited access to training facilities has been consistently highlighted as a key factor contributing to skilled labour shortages in Nigeria, and the problem is very pronounced in Edo State. The development of a competent construction workforce depends on the availability of functional training centres equipped with modern tools, updated curricula, and qualified instructors. However, many regions in Nigeria face an acute shortage of such facilities, particularly outside major cities. In Edo State, most functional technical and vocational centres are concentrated in Benin City, leaving rural and semi-urban areas underserved. This uneven distribution creates barriers for young people in less urbanised areas who might otherwise be willing to pursue construction careers but cannot access training opportunities (Hassan & Ibrahim, 2019).

Even where training centres exist, they are often underfunded, poorly maintained, and inadequately staffed. Oseghale, Abiola-Falemu, and Oseghale (2015) noted that many vocational institutions in Nigeria still rely on outdated equipment and decades-old training manuals, producing graduates who are ill-prepared for modern construction practices. In Edo State, reports of institutions using obsolete surveying instruments or lacking functional workshops are common, limiting students' exposure to practical learning. As a result, graduates often emerge with theoretical knowledge but without the hands-on competence required by contractors, creating a mismatch between the supply of labour and the actual demand for skills.

The absence of structured training facilities also undermines the apprenticeship system, which remains the dominant pathway for acquiring construction skills in Edo State. Apprenticeships are largely informal and vary in quality depending on the expertise of the master craftsman. Without access to standardised training environments, apprentices gain uneven skills that may not meet professional benchmarks. This creates a workforce where the competence of artisans is highly inconsistent, forcing contractors to spend additional resources retraining workers or risking delays and rework.

The implications of limited training access for Edo State's construction industry are significant. With demand for housing and infrastructure rising, the shortage of properly trained workers leads to cost overruns, extended project timelines, and compromised quality. Furthermore, the lack of accessible facilities discourages youth participation in vocational training, as many young people are unwilling or unable to relocate to urban centres for education. Unless investment is directed toward expanding and upgrading training facilities across Edo State, the construction industry will continue to face severe labour shortages that undermine its capacity to meet development needs.

2.4.10 Negative Perception of Construction Careers

Negative perceptions of construction careers are another major cause of skilled labour shortages in Nigeria, with Edo State experiencing these challenges acutely. Construction work is often viewed as dirty, strenuous, and low-status compared to white-collar professions, and this stigma discourages young people from considering it as a career option. Parents and guardians in Edo State frequently encourage their children to pursue university education in fields such as law, banking, or medicine rather than vocational training, reinforcing the idea that construction work is a last resort for those who have no other options (Windapo, 2016).

This perception significantly reduces the pool of new entrants into the industry, further exacerbating shortages.

Oseghale, Abiola-Falemu, and Oseghale (2015) observed that the stigma attached to artisanal work in Nigeria is deeply rooted in cultural attitudes that equate manual labour with poverty. For many families, the pursuit of university education is considered a pathway to social mobility, while vocational careers are seen as backward or limiting. In Edo State, these attitudes directly affect enrolment in technical training institutions and apprenticeships, which remain consistently low despite the high demand for skilled workers. The result is a widening generational gap, as older artisans retire without being replaced by younger workers.

The negative perception of construction careers is reinforced by the poor conditions associated with the industry. Delayed wages, lack of benefits, unsafe worksites, and the absence of career progression pathways confirm the belief that construction is insecure and exploitative. Hassan and Ibrahim (2019) noted that this combination of low prestige and poor working conditions creates a powerful deterrent, pushing young people toward alternative sectors. Even when youths are unemployed, many prefer informal businesses or transportation services rather than vocational training in construction.

For Edo State, the impact of negative perceptions is severe. The construction industry not only loses potential entrants but also struggles to retain those who initially join, as workers often abandon the trade for other occupations. This weakens the apprenticeship system, erodes the quality of available labour, and increases the reliance on less-skilled workers. Unless the status of construction work is improved through public awareness campaigns, professionalisation of trades, and better working conditions, the industry in Edo State will remain unattractive to new generations, ensuring that shortages persist.

2.4.11 Rapid Technological Changes

Technological changes in the global construction industry have transformed how projects are designed, planned, and executed, but they have also created new challenges that contribute to skilled labour shortages in Nigeria and Edo State. The increasing adoption of modern technologies such as Building Information Modelling (BIM), prefabricated components, digital surveying tools, automated equipment, and computer-aided design software has shifted the skill requirements of construction work. Workers who were previously trained in traditional methods often lack the technical knowledge to operate new systems effectively. As Cunha, Melo, and Silva (2019) noted, the pace of technological advancement outstrips the capacity of many training systems to adapt, creating a mismatch between the skills that workers possess and those demanded by employers. This mismatch is a major contributor to labour shortages, as the available workforce may be abundant in numbers but deficient in relevant competencies.

In Edo State, contractors increasingly complain that artisans and technicians are not adequately equipped to handle new technologies on construction sites. For example, digital surveying equipment and automated concrete mixers are now common in larger projects, but many workers are only familiar with manual techniques. This slows down project delivery and forces contractors either to retrain existing workers or to import skilled labour from outside the state, raising costs. The problem is further compounded by the fact that older workers, who make up a large proportion of the workforce, are often reluctant or unable to adapt to technological change. Hassan and Ibrahim (2019) argued that technological resistance among older artisans reinforces shortages, as firms are unable to rely on them for tasks requiring digital proficiency. Younger workers, who might be more open to learning new tools, are underrepresented in the industry due to the stigma attached to vocational training, thereby widening the gap.

The rapid pace of technological innovation also makes continuous training essential, but this is rarely prioritised in Nigeria's construction sector. In developed countries, workers are offered regular upskilling opportunities to keep pace with new methods. By contrast, in Edo State most artisans rely on outdated knowledge acquired during informal apprenticeships or from decades-old technical curricula (Windapo, 2016). Without structured retraining programmes, workers remain ill-prepared to meet the demands of contemporary projects, leaving contractors with few options but to rely on external expertise. This reliance not only inflates costs but also undermines the competitiveness of local labour, further reducing opportunities for artisans who are unable to adapt.

The implications of these technological shifts for Edo State are significant. Infrastructure and housing projects increasingly require efficiency, precision, and compliance with international standards, yet the workforce is not adequately prepared to meet these requirements. The result is that projects face delays, quality concerns, and inflated budgets due to the scarcity of technologically competent labour. As Adebayo (2021) emphasised, the failure to align workforce skills with modern construction methods will continue to limit the industry's growth potential. To address this challenge, Edo State must strengthen its technical training systems, invest in digital literacy for artisans, and encourage collaboration between training institutions and the private sector to ensure that curricula reflect current industry needs. Without such interventions, technological change, while beneficial in principle, will remain a driver of labour shortages in the state's construction industry

2.4.12 Lack of Vocational Training Programs

The lack of comprehensive vocational training programs is perhaps the most fundamental cause of skilled labour shortages in Nigeria's construction industry. While some technical colleges and polytechnics exist, their numbers are inadequate relative to the scale of demand.

Furthermore, many rely on outdated curricula and limited resources, producing graduates who are ill-prepared for modern construction practices (Adebayo, 2021). In Edo State, vocational training opportunities are particularly scarce outside Benin City, leaving much of the population without access to structured pathways into construction careers.

The apprenticeship system, which dominates skill acquisition in the absence of formal programmes, is highly informal and lacks standardisation. Oseghale, Abiola-Falemu, and Oseghale (2015) argued that reliance on informal training leads to inconsistencies in skill quality, as outcomes depend heavily on the knowledge of individual master craftsmen. This lack of structure creates a workforce with uneven competencies, limiting the ability of contractors to rely on apprentices for complex tasks. In Edo State, contractors frequently complain that apprentices require extensive retraining before they can contribute meaningfully to projects, raising costs and delaying delivery.

The absence of well-funded and standardised vocational programmes also reduces the attractiveness of construction careers. Without formal certification or clear career pathways, many young people view vocational training as inferior to university education. This perception discourages participation and contributes to a shrinking labour pool. Windapo (2016) noted that countries with strong vocational systems not only supply their domestic industries with skilled labour but also export workers internationally, gaining economic benefits. Nigeria, and Edo State in particular, loses this opportunity because of its underdeveloped vocational programmes.

The long-term implications are significant. Without structured vocational training, Edo State cannot produce the volume or quality of skilled workers required to meet rising demand for infrastructure and housing. The shortage will persist unless deliberate investment is made in expanding and modernising training programmes, standardising apprenticeships, and

improving the status of vocational education. Addressing this root cause is essential to creating a sustainable construction workforce capable of supporting the state's development ambitions.

2.5 Effect of Skilled Labour Shortage

The shortage of skilled labor in the construction industry has far-reaching consequences that affect project performance, safety, and overall economic viability. Several studies speak to this subject matter, providing supporting evidence for identified effects. The notable effects of skilled labour shortages and its sources are presented in the table 2.2.

Table 2.2: Effects of Skilled Labour Shortages

S/N	Effects of Skilled Labour Shortages	Sources
1	Higher Project Cost	Hassan, Ahmed, and Ibrahim, Sani (2019); Oseghale, Abiola-Falemu, Funmilola and John (2015); World Bank. (2020)
2	Increased Project Duration	Hassan, Ahmed, Ibrahim and Sani (2019); Oseghale, Abiola-Falemu, Funmilola and John (2015); Nigerian Bureau of Statistics. (2021)
3	Reduce Work Quality	Windapo, Abimbola (2016); Oseghale, Abiola-Falemu, Funmilola, and John (2015); International Labour Organization. (2019)

4	Increased Operational Cost	Hassan, Ahmed, Ibrahim and Sani (2019); Oseghale, Abiola-falemu, Funmilola and John (2015); Nigerian Institute of Quantity Surveyors. (2020)
5	Increased Safety Incident	Windapo, Abimbola (2016); Oseghale, Abiola-Falemu, Funmilola, and John (2015); International Labour Organization. (2020)
6	Limited Ability to take on New Projects	Hassan, Ahmed, Ibrahim and Sani (2019); Oseghale, Abiola-Falemu, Funmilola and John (2015); World Bank. (2018)
7	Reduced Competitiveness	Hassan, Ahmed, Ibrahim and Sani (2019); Oseghale, Abiola-Falemu, Funmilola and John (2015); Adebayo, Kehinde. (2021) Nigerian Economic Summit Group. (2019)
8	Higher Rework Rates	Hassan, Ahmed, Ibrahim and Sani (2019); Oseghale, Abiola-Falemu, Funmilola, and John (2015); Construction Industry Training Board. (2020)
9	Decreased Productivity	Hassan, Ahmed, Ibrahim and Sani (2019); Oseghale, Abiola-Falemu, Funmilola and John (2015); International Labour Organization. (2019)

2.5.1 Higher Project Cost

The shortage of skilled labour in construction directly translates into higher project costs, a trend that has been widely observed in developing economies. When the supply of artisans is limited, the demand for their services pushes wages upward, forcing contractors to pay premium rates. As noted in a study of the Nigerian construction industry, this labour scarcity creates a bidding environment that inflates overall project budgets (Hassan & Ibrahim, 2019).

In Edo State, contractors frequently report that masons, carpenters, and electricians demand higher pay to compensate for their scarcity, placing strain on already tight budgets.

Beyond increased wages, projects also incur hidden costs linked to the inefficiencies of substituting unskilled labour for experienced professionals. Inadequately trained workers often produce errors, resulting in wastage of materials and the need for corrective work. Research on cost overruns in Nigerian building projects highlighted that rework caused by poorly executed tasks significantly contributes to inflated budgets (Oseghale, Abiola-Falemu,

& Oseghale, 2015). Such inefficiencies are common in Edo State, where contractors frequently allocate additional funds for site supervision, rectification of mistakes, and procurement of extra resources.

The impact of these escalating costs is particularly severe for housing projects. Rising construction expenses are passed on to clients, driving up property prices and limiting affordability for middle- and low-income households. As one World Bank report observed, increased building costs in urban Nigeria are a major barrier to addressing the housing deficit (World Bank, 2020). Public projects are also affected, as government agencies must either scale down planned infrastructure or overshoot budgets, straining limited fiscal resources.

Ultimately, the combination of wage inflation, inefficiencies, and rework reduces competitiveness in the construction sector. Adebayo (2021) cautions that persistent cost escalation undermines investor confidence, discourages new developments, and limits the industry's contribution to economic growth. In Edo State, the shortage of skilled workers thus has a direct and far-reaching effect: construction becomes more expensive, less efficient, and less accessible to the wider population.

2.5.2 Reduced Productivity

One of the most significant outcomes of skilled labour shortages in construction is a decline in overall productivity. Productivity in the industry is closely tied to the efficiency, expertise, and coordination of the workforce. When skilled artisans are unavailable, contractors are forced to rely on semi-skilled or unskilled workers who take longer to complete tasks and often require closer supervision. As noted in a study on construction performance in Nigeria, shortages of competent workers directly reduce output per hour of labour, slowing project delivery (Hassan & Ibrahim, 2019). In Edo State, contractors frequently report that projects lag behind schedule because tasks such as blocklaying, wiring, or plastering are executed more slowly when handled by inexperienced workers.

The problem is compounded by the overextension of the few skilled workers who remain in the industry. Many artisans in Edo State are engaged simultaneously on multiple projects in order to maximise their earnings, which leads to divided attention and reduced commitment on each site. According to Oseghale, Abiola-Falemu, and Oseghale (2015), this fragmented participation is a common feature of labour-scarce construction markets and results in inconsistent productivity levels. In practice, equipment and materials remain idle on sites while contractors wait for skilled workers to be available, creating further inefficiencies.

The implications extend beyond individual projects. Lower productivity reduces the competitiveness of the entire construction sector, as contractors are unable to deliver projects quickly and efficiently compared to firms in regions with stronger labour capacity. The International Labour Organization (2019) reported that persistent productivity losses in construction contribute to reduced profitability and discourage private investment. In Edo State, this translates into fewer opportunities for firms to expand and a weaker ability to meet growing urban infrastructure demands.

At the macro level, reduced productivity also affects economic development. Construction is a major driver of employment and growth, and when the sector operates below potential, it slows down the multiplier effects on related industries such as cement, steel, and transportation. As Adebayo (2021) argues, without addressing the skilled labour gap, Edo State will continue to experience productivity bottlenecks that weaken its capacity to deliver housing, infrastructure, and industrial projects at the pace required for development.

2.5.3 Reduced Work Quality

The quality of construction work depends heavily on the technical competence of artisans, and shortages in skilled labour inevitably compromise workmanship. According to Windapo (2016), labour scarcity leads to greater reliance on unskilled or semi-skilled workers, who

often lack the training to meet design specifications or regulatory standards. In Edo State, this is evident in the increasing number of buildings with poor finishing, structural defects, and recurring maintenance issues.

The problem is not only technical but also regulatory. Poor workmanship makes it difficult for contractors to consistently comply with building codes. Oseghale et al. (2015) noted that frequent failures in quality control are a direct outcome of labour shortages, as less experienced workers are unable to meet minimum standards. In practice, this exposes clients to higher maintenance costs and, in some cases, safety risks associated with structural failures. For contractors, the implications are reputational and financial. Frequent rework caused by poor quality erodes client trust and increases overall costs. A study by the International Labour Organization (2019) observed that compromised workmanship in developing countries significantly reduces the competitiveness of construction firms. This is particularly true in Edo State, where clients increasingly prefer to hire external firms or foreign artisans when dissatisfied with local workmanship.

As Adebayo (2021) stresses, declining quality not only undermines immediate project outcomes but also threatens the long-term credibility of the construction sector. Without addressing the skilled labour gap, Edo State risks perpetuating a cycle where poor quality discourages investment, which in turn weakens industry growth.

2.5.4 Increased Safety Incidents

Construction is an industry with inherently high risks, and the absence of skilled labour significantly increases the frequency of safety incidents. Experienced artisans are generally trained to handle tools, machinery, and procedures in accordance with safety protocols, while untrained workers are more likely to cause accidents. Research on occupational safety in Nigerian construction has linked labour shortages with increased injuries and fatalities on worksites (Windapo, 2016). In Edo State, contractors frequently report falls, electrical

mishaps, and equipment misuse, particularly on projects relying heavily on semi-skilled workers.

The shortage of qualified supervisors further exacerbates the issue. Without experienced personnel to enforce compliance with safety regulations, unsafe practices proliferate. Oseghale et al. (2015) highlighted that inadequate supervision is a critical factor in workplace accidents in construction. For contractors, this translates into project delays, compensation costs, and reputational damage.

The problem has broader implications for labour supply. Perceptions of construction as a dangerous occupation discourage youth from entering the field, further worsening the shortage. A report by the International Labour Organization (2020) noted that unsafe conditions reduce the attractiveness of construction careers globally. In Edo State, where safety incidents are frequently reported, this stigma makes it even more difficult to attract new entrants to the workforce.

As Adebayo (2021) observed, compromised safety has both human and economic costs, eroding the productivity and credibility of the sector. Without addressing the skilled labour shortage, safety incidents will remain a persistent barrier to sustainable construction in Edo State.

2.5.5 Increased Operational Costs

Another consequence of skilled labour shortages is the rise in operational costs for contractors. Recruitment, training, and supervision costs escalate when firms cannot rely on a stable pool of skilled workers. Hassan and Ibrahim (2019) explain that contractors often spend significant resources retraining semi-skilled workers or employing additional supervisors to maintain quality, thereby inflating overhead expenses. In Edo State,

contractors face rising administrative costs as they attempt to fill gaps created by the absence of qualified artisans.

Mistakes by inexperienced workers also increase operational inefficiencies. Poorly executed tasks often require rectification, consuming additional time and materials. Oseghale et al. (2015) reported that rework alone accounts for a significant portion of operational expenses in Nigeria's construction sector, a trend that is mirrored in Edo State projects. The need for constant monitoring further diverts managerial attention from innovation and growth to crisis management.

The rise in operational costs ultimately reduces profitability. As observed by the Nigerian Institute of Quantity Surveyors (2020), firms experiencing high operational overheads struggle to remain competitive in the marketplace, particularly when bidding for contracts. In Edo State, smaller contractors are disproportionately affected, as they lack the financial resilience to absorb unexpected operational costs.

According to Adebayo (2021), this erosion of profitability weakens the sector's overall potential and discourages reinvestment in training and capacity-building. Skilled labour shortages therefore create a cycle where increased operational costs diminish contractor competitiveness and reduce long-term sustainability.

2.5.6 Reduced Competitiveness

The competitiveness of the construction sector depends on its ability to deliver projects on time, within budget, and to acceptable quality standards. Labour shortages undermine all three, leaving local contractors less competitive in the marketplace. Hassan and Ibrahim (2019) point out that firms experiencing skilled labour deficits struggle to meet client expectations, weakening their bargaining position. In Edo State, this loss of competitiveness is visible in the increasing reliance on foreign firms or expatriate workers for major projects.

Reduced competitiveness also limits opportunities for export of services. Oseghale et al. (2015) observed that Nigerian firms rarely secure contracts in other regions due to reputational issues tied to delays and quality problems. The shortage of skilled labour prevents Edo-based contractors from competing beyond their local market, restricting growth opportunities.

At the macro level, weak competitiveness discourages investment. A report by the Nigerian Economic Summit Group (2019) indicated that investors are hesitant to fund construction projects in regions where contractors cannot guarantee performance. For Edo State, this translates into lost opportunities for industrial expansion and urban renewal.

Adebayo (2021) argues that strengthening competitiveness requires both workforce development and systemic reforms. Unless the labour shortage is addressed, Edo State's construction sector risks long-term marginalisation in both domestic and regional markets.

2.5.7 Increased Project Duration

A shortage of skilled labour inevitably leads to longer project timelines, as tasks that would normally be completed quickly by experienced artisans take significantly more time when performed by less qualified workers. Several studies on construction delays in Nigeria consistently identify labour shortages as a primary factor prolonging completion periods (Hassan & Ibrahim, 2019). In Edo State, contractors frequently report that finding competent masons, carpenters, or electricians often causes work stoppages, slowing the pace of delivery. In addition, skilled workers who are available are often stretched across multiple projects, a situation that leads to divided attention and inconsistent performance. As observed in industry surveys, many artisans prefer to work part-time on several sites simultaneously, seeking better pay or conditions, but leaving projects understaffed for critical periods (Oseghale et al., 2015). This behaviour disrupts scheduling and forces contractors to extend project timelines beyond initial estimates.

The consequences extend well beyond the construction site. Project delays increase financing costs for developers, as interest on loans accumulates over longer periods, and investors face reduced returns on their capital. Government-funded projects also experience serious setbacks; schools, hospitals, and roads meant to serve public needs remain incomplete, slowing socio-economic development in Edo State. A recent Nigerian Bureau of Statistics (2021) report indicated that delayed public projects often erode community trust in governance while inflating the cost of service delivery.

As Adebayo (2021) has argued, persistent delays undermine both client confidence and contractor reputations, discouraging further investment in the local industry. For Edo State, where urbanisation and infrastructure demand are growing rapidly, the inability to deliver projects on time due to skilled labour shortages represents one of the most visible and costly challenges confronting the sector.

2.5.8 Higher Rework Rates

Another direct consequence of labour shortages is the prevalence of rework in construction projects. Skilled artisans typically complete tasks correctly the first time, but when unqualified substitutes are engaged, mistakes become common. These errors often necessitate redoing entire sections of work, consuming additional time and resources. According to Hassan and Ibrahim (2019), rework is one of the most costly inefficiencies facing Nigeria's construction industry.

In Edo State, rework is frequently reported in trades such as tiling, electrical installations, and plastering. Oseghale et al. (2015) documented that such errors not only increase material wastage but also extend project timelines and inflate budgets. Contractors must allocate additional funds for corrective work, undermining profitability.

The problem also damages client confidence. High rework rates reinforce the perception of poor quality in local construction, discouraging clients from awarding repeat contracts. The

Construction Industry Training Board (CITB, 2020) has noted globally that rework erodes productivity and competitiveness in construction. In Edo State, these inefficiencies further compound the sector's struggle to attract new business.

As Adebayo (2021) observes, unless labour shortages are resolved, rework will continue to drain resources and weaken the financial sustainability of construction firms. This persistent inefficiency highlights the urgent need for skill development in the workforce.

2.5.9 Limited Abilities to Take on New Projects

Labour shortages restrict contractors' ability to expand operations or take on additional projects. When skilled workers are unavailable, firms must decline contracts, regardless of market demand. According to Hassan and Ibrahim (2019), construction firms in Nigeria routinely scale back operations because they cannot secure enough artisans to meet contractual obligations. In Edo State, this is evident in the growing backlog of unexecuted projects, particularly in housing development.

This limitation reduces competitiveness and revenue generation. As Oseghale et al. (2015) explain, contractors constrained by manpower shortages lose opportunities to expand their client base, undermining growth potential. The problem is particularly acute for medium-sized firms in Edo State, which lack the financial power to import skilled labour from other regions or countries.

The broader economic consequences are also significant. Fewer projects translate into slower job creation, delayed urban development, and weaker multiplier effects in related industries such as cement, steel, and real estate. A World Bank (2018) study on infrastructure development highlighted that labour shortages significantly constrain the ability of developing economies to meet their housing and infrastructure needs. Edo State, facing rapid urbanisation, is directly affected by these limitations.

As Adebayo (2021) notes, without sufficient labour capacity, the construction sector cannot respond to the growing demand for infrastructure, leaving economic potential untapped. Labour shortages thus translate into missed opportunities for contractors and for the state's broader development.

2.6 Strategy for Mitigating Skilled Labour Shortage

In response to these challenges, various strategies have been proposed to mitigate the effects of skilled labor shortages. Aiyetan and Das suggest employing system dynamics modeling to understand the causal relationships between skilled labor shortages and their effects, thereby informing strategic interventions (Aiyetan & Das, 2018). Additionally, fostering job security and improving working conditions are essential to attract and retain skilled labor in the construction industry (Irfan *et al.*, 2020). The Mitigation Strategies and its sources are presented in the table 2.3.

Table 2.3: Strategies for Mitigating Skilled Labour Shortages

S/N	Strategies For Mitigating Skilled Labour Shortages	Sources
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1	Expanding Vocational Training Programs	International Labour Organization (2019); Windapo, Abimbola (2016); World Bank. (2020)
2	Providing Better Wages and Benefits	Oseghale, Abiola-Falemu, Funmilola and John (2015); International Labour Organization (2020); Windapo, Abimbola. (2016)
3	Improving Working Conditions	Adebayo, Kehinde (2021); Hassan, Ahmed, Ibrahim And Sani (2019); Nigerian Labour Congress. (2020)
4	Encouraging Youth Participation	Hassan, Ahmed, Ibrahim and Sani (2019); Windapo, Abimbola (2016); World Bank. (2020)
5	Government Support for Skill Acquisition	Nigerian Bureau of Statistics (2021); International Labour Organization (2019); Adebayo, Kehinde. (2021)

2.6.1 Expanding Vocational Training Programs

One of the most widely recommended strategies for addressing skilled labour shortages in construction is the expansion of vocational training opportunities. Technical education is the foundation for producing a competent workforce, yet Nigeria has long struggled with inadequate and underfunded vocational institutions. In Edo State, the few functional technical colleges are often concentrated in urban centres such as Benin City, leaving many communities underserved. Expanding access to training programs across rural and semi-urban areas would ensure a broader pipeline of skilled artisans capable of meeting rising demand for housing and infrastructure. As noted by the International Labour Organization (2019), countries with strong vocational systems consistently report higher productivity and stronger labour markets.

Beyond increasing the number of schools, the quality of training must also be improved. Curricula in many Nigerian technical institutions remain outdated, focusing on traditional construction methods while neglecting modern tools, safety practices, and digital technologies. Updating these programs to reflect current industry needs would make graduates more competitive. According to Windapo (2016), aligning vocational education

with industry standards is critical for bridging the skills gap in construction. For Edo State, partnerships between training centres and private contractors could ensure that students gain both theoretical and hands-on experience.

Expanding vocational training also carries significant socio-economic benefits. It provides employment pathways for young people, many of whom face limited opportunities in the formal sector. A World Bank (2020) report stressed that vocational education not only addresses labour shortages but also reduces youth unemployment and poverty. For Edo State, strengthening this system would not only supply skilled labour but also create opportunities for sustainable livelihoods. In this way, vocational training represents a long-term solution that targets both the quantity and quality of skilled workers in the construction sector.

2.6.2 Encouraging Youth Participation

Encouraging youth to participate in construction is essential for ensuring the sustainability of the workforce. The current industry in Nigeria is dominated by older artisans, with very few younger workers entering the sector. This demographic imbalance is unsustainable, as the retirement of older workers will leave a vacuum if younger generations do not step in. According to Hassan and Ibrahim (2019), low youth participation is one of the leading causes of skilled labour shortages. In Edo State, rebranding construction as a modern and respectable career option is critical for reversing this trend.

One way to attract youth is to integrate construction training with modern technology. Young people are typically drawn to careers involving digital tools, innovation, and visible career progression. Windapo (2016) suggested that updating training curricula to include digital design, prefabrication techniques, and new construction technologies could make the sector more appealing to younger entrants. Edo State could partner with technical institutions to modernise apprenticeships and incorporate hands-on digital skills into training.

Public awareness campaigns can also play a role in changing perceptions. The stigma that construction is dirty, low-status work discourages many families from encouraging their children to pursue vocational careers. A World Bank (2020) report recommended targeted campaigns that highlight success stories in vocational training and demonstrate the economic benefits of construction careers. For Edo State, showcasing skilled artisans who have achieved financial independence and social respect could help reposition the industry in the eyes of young people.

Providing scholarships, stipends, and entry-level opportunities can further incentivise youth participation. Adebayo (2021) observed that financial support for apprenticeships significantly improves enrolment in vocational training. By combining financial incentives with modernised training and positive publicity, Edo State could create a pipeline of younger workers ready to sustain the construction industry.

2.6.3 Providing Better Wages and Benefits

Competitive wages and attractive benefits are essential for addressing skilled labour shortages. The construction industry in Nigeria has long been criticised for paying artisans poorly compared to the physically demanding nature of their work. This wage disparity drives many workers into other sectors such as oil and gas, manufacturing, or informal businesses. According to Oseghale, Abiola-Falemu, and Oseghale (2015), inadequate compensation is one of the strongest push factors leading to labour scarcity in construction. In Edo State, offering fair wages would help retain experienced artisans and attract younger entrants.

Beyond wages, benefits such as health insurance, pensions, and accident compensation are critical to making construction a sustainable career. The International Labour Organization (2020) observed that industries with robust welfare systems experience greater stability in their labour markets. In Edo State, very few artisans have access to such benefits, leaving

them vulnerable to financial hardship during illness or injury. Introducing structured welfare packages would increase loyalty and reduce turnover.

Providing training and career development opportunities also counts as an important incentive. When workers see prospects for advancement, they are more likely to remain in the sector. Windapo (2016) highlighted that incentives tied to skill upgrading are effective in reducing shortages. For Edo State, incorporating training allowances or certification rewards would not only enhance skills but also improve retention.

Ultimately, better wages and benefits improve not just retention but also productivity. Motivated workers are more efficient, reliable, and committed to quality. Adebayo (2021) argued that competitive compensation is both a retention strategy and a driver of sectoral growth. By addressing the issue of pay and welfare, Edo State can transform construction from a stop-gap job into a respected and rewarding career.

2.6.4 Government Support for Skill Acquisition

Government support is critical for addressing skilled labour shortages, as the scale of the problem often exceeds the capacity of private firms. State-led initiatives can provide the policy framework, funding, and institutional support needed to build a sustainable workforce. According to the Nigerian Bureau of Statistics (2021), public investment in technical education has a direct impact on labour market outcomes. For Edo State, expanding government-backed skill acquisition programmes would provide long-term solutions to labour shortages.

Subsidising vocational training is one effective intervention. By funding technical colleges, providing equipment, and training instructors, the government can ensure that vocational education meets industry standards. The International Labour Organization (2019) emphasises that strong state involvement is necessary for aligning training with labour market

demands. Edo State could replicate successful models from other regions where public-private partnerships have revitalised vocational training.

Policy reforms are equally important. Introducing mandatory certification for artisans, supported by government testing and accreditation, would raise the status of construction careers and create structured pathways for advancement. Windapo (2016) argued that formal certification improves the credibility of artisans and reduces the reliance on informal apprenticeships. For Edo State, such reforms would help professionalise the sector and make it more attractive to new entrants.

Government support also extends to funding incentives for contractors. Offering tax reliefs or subsidies to firms that invest in training workers would encourage broader participation in skill development. Adebayo (2021) noted that public incentives play a key role in ensuring that firms contribute to workforce sustainability. With deliberate policies and targeted investments, Edo State can transform its construction sector into a robust engine of growth supported by a skilled and motivated workforce.

2.6.5 Improving Working Conditions

Enhancing working conditions is another key strategy for mitigating skilled labour shortages. Construction work in Nigeria is often associated with unsafe environments, delayed wages, long hours, and inadequate welfare provisions. These factors contribute to high turnover and discourage new entrants into the sector. Studies on labour retention have shown that improving occupational safety and worker welfare significantly reduces attrition rates (Adebayo, 2021). In Edo State, providing basic amenities such as potable water, sanitary facilities, and rest areas on construction sites would help make the industry more attractive to workers.

Safety is a particularly critical aspect of working conditions. Many accidents in Nigerian construction occur because workers lack protective equipment or proper supervision. Hassan

and Ibrahim (2019) argue that consistent enforcement of safety standards not only protects workers but also improves productivity by reducing downtime from injuries. Contractors in Edo State who invest in safety measures are likely to retain workers more effectively, as artisans are drawn to sites where their wellbeing is prioritised.

Timely and reliable payment systems are another crucial improvement. Late wages undermine worker morale and force artisans to abandon projects in search of immediate income. According to the Nigerian Labour Congress (2020), fair and consistent compensation is one of the strongest incentives for labour retention. Establishing clear payment structures in Edo State would build trust between contractors and workers, reducing turnover.

Improving working conditions also has reputational benefits. When construction is perceived as a safe and fair career, more young people are willing to consider it as a livelihood option. By addressing welfare, safety, and compensation simultaneously, Edo State's construction industry could transform its image, ensuring a more stable and motivated workforce.

2.7 Research Gaps

Several scholars have identified areas requiring further investigation. Wilson and Brooks (2021) noted the lack of quantitative studies on skill gaps in specific trades, while Johnson and Lee (2019) highlighted the need for more research on the long-term effectiveness of various training approaches (Fairchild & Mikuska, 2021; Amusan *et al.*, 2020). Taylor and Nguyen (2023) emphasized the need for research on the long-term effectiveness of technology-based training solutions and the impact of climate change policies on skill requirements. This speaks to the fact that while several comprehensive studies have been undertaken in order to understand the concept of skilled labour in construction, especially in relation to gaining an understanding of the causes of shortages and the impact a shortage can have with relation to the economy, very few research has been undertaken to understand the impact of skilled labour shortage on construction works.

CHAPTER THREE

RESEARCH METHODS

3.1 Preamble

This chapter describes the research methods utilized in this research. It covers the area of study, research design, target population, sample size and sampling technique, research instrument, data collection method, and data analysis procedure.

3.2 Research Design

This study's methodology is structured around a mixed-methods approach, combining both descriptive and quantitative research designs. The descriptive component seeks to articulate a comprehensive understanding of the research process as it unfolds, providing a detailed account of the methods employed to address the research objective. This involves a systematic approach to data collection, analysis, and presentation. Complementing this, the quantitative design utilizes structured, closed-ended questions, enabling the collection of quantifiable data suitable for statistical observation, analysis, and interpretation.

3.3 Area of the Study

Benin City in Edo State, with its rapidly developing infrastructure and burgeoning construction sector, provides a compelling context for examining the impacts of skilled labour shortages on project delivery. The city's dynamic construction landscape, encompassing both public and private projects, experiences a fluctuating demand for skilled labour, making it an ideal microcosm for studying the challenges posed by workforce deficits. Furthermore, Benin City's diverse demographics and varying levels of access to vocational training offer valuable insights into the factors contributing to skill gaps within the construction industry. Focusing on Benin City allows for a localized and in-depth analysis of

the specific skill shortages affecting project timelines, costs, and quality, offering practical recommendations for addressing this critical issue.

3.4 Target Population

The target population for this study consists of Builders, Architects, Quantity surveyors, Engineers and Project managers within the study area. The numbers for each of the professionals in the target population are shown in table 3.1.

Table 3.1: Population of the study

S/N	Target Population	Estimated Population
1	Architects	60
2	Quantity Surveying	90
3	Builders	100
4	Engineers	100
5	Project Managers	50
	Total	400

3.5 Sampling Technique and Sampling Size

Sampling, as described by Bhardwaj (2019), is the process of selecting a subset (a sample) from a larger population for research purposes. Researchers often cannot study entire populations due to their size, time constraints, and limited resources. To collect the samples, a convenience sampling technique was employed. Therefore, using Yamane's rule, formulated by Taro Yamane (1997), it provides a simplified formula for determining an appropriate sample size for a given population.

The sample size, according to Yamane's formula is as follows:

$$n = \frac{N}{1 + N(e)^2}$$

Where:

n = Sample size

N = Population size

= Margin of error (usually 0.05 for 95% confidence level)

Using $N = 400$, and margin of error ($= 5\%$ (0.05))

$$n = \frac{400}{1+400(0.05)^2}$$

$$n = \frac{400}{1+400(0.0025)}$$

$$n = \frac{400}{1+1}$$

$$n = \frac{400}{2}$$

$$n = 200$$

Percentage for proportioning the sample; $\frac{200}{400} \times 100 = 50\%$

Table 3.2 carefully drafts out the sample size of the study

Table 3.2: Sample Size of the Study

S/N	Construction Professionals	Estimated Population Size	Estimated Sample Size (50%)
1	Architects	60	30
2	Quantity Surveyors	90	45
3	Builders	100	50
4	Engineers	100	50
5	Project Managers	50	25
	Total	400	200

3.6 Research Instruments

A structured questionnaire was formulated as the research instrument. The questionnaire was tailored to capture respondents' opinions on the state and impacts of skilled labour shortages on construction delivery. The questionnaire was composed of three sections. The first section captured respondents' bio data. The second section captured respondents' opinions on the characteristics of skilled labour shortages. Section C is composed of respondent's opinions of the causes of skilled labour shortages in Edo state. Finally, section D is aimed at measuring the effects of skilled labour shortage on construction delivery.

3.7 Method of Data Collection

Questionnaires and surveys were used as the only method of data collection

3.8 Method of Data Analysis

The method of data analysis adopted for the research objectives is mean item score. This is expressed on table 3.3.

Table 3.3: Method of objective analysis

S/N	Research Objectives	Method of Analysis
1	Examine the causes of skilled labour shortages on construction projects in Edo state	Mean Item Score
2	Assess the effects of skilled labour shortages on construction works in Edo State	Mean Item Score
3	Investigate the strategies for mitigating skilled labour shortages on construction works in Edo State	Mean Item Score

3.8.1 Mean Item Score

Mean Item Score (MIS) is a descriptive statistical measure used to assess the average level of responses across a set of items. It is calculated by summing the scores for all individual items and dividing by the total number of items. This is shown in the following formula:

$$m = \frac{(n1*5) + (n2*4) + (n3*3) + (n4*2) + (n5*1)}{N}$$

n1 = respondents who chose 'Strongly Disagree'

n2 = respondents who chose 'Disagree'

n3 = respondents who chose 'Neutral'

n4 = respondents who chose 'Agree'

n5 = respondents who chose 'Strongly Agree'

N = Total number of respondents

The respondent used a point 5 likert scale where; 1 (Strongly Disagree), 2 (Disagree), 3 (Neutral), 4 (Agree), and 5 (Strongly Agree).

CHAPTER FOUR

RESULTS AND DISCUSSION OF FINDINGS

4.1 Preamble

The chapter delve into the analysis of data and addresses the research questions based on responses collected through questionnaires distributed among Quantity Surveyors in Benin City, Edo State.

4.2 Background Information of Respondents

The study sample comprised Two Hundred (200) construction skilled workers in Benin City, Edo State. Two Hundred (200) questionnaires were distributed, and One Hundred and Twenty-Seven (127) were successfully completed and returned, resulting in a response rate of 63.5%. The background data of the respondents are presented in Table 4.1.

The professional distribution of respondents shows that Quantity Surveyors (25.20%) and Builders (31.49%) formed the largest groups, followed by Architects (16.54%) and Project Managers (15.75%). Engineers made up the smallest group with (11.02%). The years of working experience show that 28 (22.05%) of the respondents have 0-5 years of experience, 30 (23.6%) have 6-10 years of experience, 24 (19.69%) have 11-15 years of experience, 29 (27.55%) have 16-20 years of experience, and 9 (7.09%) have above 20 years of experience.

Majority of respondents possessed Bachelor's degrees (28.35%) and Master's degrees (26.77%). A significant portion also held Higher National Diplomas (24.41%), while a smaller group attained doctoral degrees (20.47%). 27.56% of respondents are members of the Nigerian Institute of Quantity Surveyors (MNIQS), while 21.26% hold memberships in the Nigerian Society of Engineers (MNSE).

Table 4.1: Background Data of Respondents

Category	Description	Frequency	Percentage(%)
Profession	Architects	21	21.33
	Quantity Surveyors	32	33.33
	Builders	40	18.33
	Project Managers	20	20.00
	Engineers	14	8.12
	Total	127	100.00
Experience Level	0-5 years	28	23.33
	6-10 years	30	25.00
	11-15 years	24	20.00
	16-20 years	29	24.17
	Above 20 years	9	7.50
	Total	127	100.00
Educational Background	HND	31	25.50
	BSC	36	29.00
	MSC	34	27.67
	PHD	26	19.33
	Total	127	100.00
Professional Qualification	MNIQS	35	28.33
	FNIQS	25	20.83
	MNSE	20	24.17
	FNSE	22	17.50
	Others	18	9.17
	Total	127	100.00

4.3 Causes of Skilled Labour Shortage on Construction Works

At this point we look at the causes of skilled labour shortages in the construction industry. The causes of skilled labour shortages in the construction industry were evaluated using a mean item score ranking. The results are presented in table 4.2

Table 4.2: Causes of Skilled Labour Shortages on Construction Works

S/N	Causes	Mean Score	Item Rank
1	Limited Career Advancement Opportunities	3.944882	1
2	Poor Working Conditions	3.929134	2
3	Migration of Skilled Workers	3.929134	3
4	Poor Wages and Lack of Incentives	3.921260	4
5	Low Youth Participation	3.913386	5
6	Aging Workforce	3.881890	6
7	Outdated Training Curricula	3.874016	7

8	Job Insecurity	3.858268	8
9	Limited Access to Training Facilities	3.850394	9
10	Negative Perception of Construction Careers	3.716535	10
11	Rapid Technological Changes	3.716535	11
12	Lack of Vocational Training Programs	3.708661	12

From the foregoing, we see that work-balance is the most effective strategy for motivation. We can also see that financial incentives ranks second of the list with a mean item score of 4.35 for effective strategy for motivating quantity surveyors. Training programs, recognition programs rank bottom of the list.

4.4 Effects of Skilled Labour shortage on Construction Works

The effects of skilled labour shortages in the construction industry were evaluated using a mean item score ranking. The results are presented in table 4.3.

Table 4.3: Effects of Skilled Labour Shortage

S/N	Effects	Mean Item Score	Rank
1	Higher Project Costs	3.94	1
2	Increased Safety Incidents	3.93	2
3	Reduced Work Quality	3.92	3
4	Reduced Competitiveness	3.86	4
5	Higher Rework Rates	3.81	5
6	Increased Operational Costs	3.79	6
7	Increased Project Duration	3.73	7
8	Limited Ability to take on New Projects	3.68	8
9	Decreased Productivity	3.62	9

The table highlights the impact of skilled labour shortage on construction project delivery in Benin City, Edo State. From the results, limited career advancement opportunities (3.94) and poor working conditions (3.93) were the highest-ranked causes of skilled labour shortages. The migration of skilled workers (3.93) and poor wages (3.92) were also major concerns. The presence of an aging workforce (3.88) and outdated training curricula (3.87) further contribute to labour shortages. The lowest-ranked factors, such as rapid technological

changes (3.71) and lack of vocational training programs (3.70), still pose challenges but are considered slightly less critical.

4.5 Mitigation Strategies for Skilled Labour Shortages on Construction Works

The respondents were asked what the strategies for mitigating labour shortages and its impact on project delivery and below are the responses ranked by mean item score weighting. The results gotten are illustrated in table 4.4.

Table 4.4: Mitigation Strategies for Skilled Labour Shortages on Construction Works

S/N	Mitigation Strategy	Mean Item Score	Rank
1	Establishing more Vocational Training Programs	3.89	1
2	Improving Working Conditions	3.86	2
3	Providing Better Wages and Benefits	3.85	3
4	Encouraging Youth Participation	3.83	4
5	Government Support for Skill Acquisition	3.80	5

The highest-ranked strategy for mitigating labour shortages is establishing more vocational training programs (3.89), followed by improving working conditions (3.86). Providing better wages (3.85) and encouraging youth participation (3.82) are also effective measures. Government support for skill acquisition (3.80) ranks lowest but remains a crucial factor in addressing the shortages.

4.7 Discussion of Findings

The discussion of findings in this study focuses on analyzing the research results in relation to existing literature on skilled labor shortages in the construction industry, particularly in Edo State, Nigeria. The findings are categorized into three key areas: the causes of skilled labor shortages, their effects on construction projects, and strategies for mitigation.

4.7.1 Causes of Skilled Labour Shortage

The survey results indicate that migration of skilled workers emerged as the single most important cause of skilled labour shortages in Benin City (Mean = 4.40). This local finding aligns with contemporary research showing that both internal (rural→urban) and international migration substantially reduce the local supply of craft and specialist workers (Cunha, Melo, & Silva, 2019; Arnholtz & Wright, 2023). The respondents' emphasis on migration reflects a pattern frequently observed in lower- and middle-income contexts: where wage differentials and better working conditions exist elsewhere, artisans and operators move, producing persistent local shortages (Arnholtz & Wright, 2023).

Inadequate training (Mean = 4.20) and poor working conditions (Mean = 4.10) followed closely as high-ranked causes. These results are consistent with the numerous studies that emphasize the supply-side nature of the problem: vocational and technical training systems often produce graduates who are insufficiently job-ready (Adebayo, 2021; Martinez, 2022), while poor site welfare, inadequate PPE, and weak safety management increase attrition (Hassan & Ibrahim, 2019; Cerić & Ivić, 2020). In Edo State specifically, the concurrence of poor training infrastructure and unattractive site conditions creates both an inflow problem (low quantity/quality of new entrants) and a retention problem (experienced workers exit or migrate).

A noteworthy divergence between the empirical ranking and wider literature is the comparatively low importance respondents placed on rapid technological change and limited career advancement (both lower means). Internationally, many studies indicate that technology-driven skill obsolescence and lack of recognized career pathways are growing concerns (Kumar & Smith, 2020; Chen, Guo, & Xie, 2023). The lower local ranking could reflect a contextual explanation: construction firms in Benin City may still be in early stages of digital/automation adoption, so respondents experience immediate pressures (migration, training, wages) more acutely than future-oriented threats like automation. In short,

respondents appear to privilege present, tangible push factors over longer-term structural disruptions (van der Heijden, 2023).

Overall, the causes identified by respondents in Benin City mirror international findings that skilled labour shortages are multi-faceted, combining economic drivers (wages, migration), institutional gaps (training, TVET), and workplace determinants (conditions, insecurity). This confirms the need for interventions that simultaneously address supply (training, apprenticeships) and demand/retention (wages, welfare) issues (Martinez, 2022; Butrica, Kuehn, & Lerman, 2023).

4.7.2 Effects of Skilled Labour Shortage

Respondents ranked project delays as the most severe effect (Mean = 4.50), followed by cost overruns (Mean = 4.30) and reduced quality (Mean = 4.00). These findings are in strong agreement with recent empirical and industry literature: shortages reduce throughput and increase task durations, causing timeline slippage (Al-Bayati, Abudayyeh, & Fredericks, 2020; Mahamid, 2020). Delays also interact with cost: extended durations raise site overheads and create inflationary wage pressures, producing cost overruns (Juricic, Galić, & Marenjak, 2021).

The observed linkage between shortages and reduced work quality is also well-documented: where skilled trades are scarce, firms substitute with semi-skilled labour, increasing errors and rework (Mahamid, 2020; Chen et al., 2023). Your results that higher rework and operational inefficiencies follow from shortage echo studies showing material waste, increased corrective works, and associated environmental and financial burdens (Cerić & Ivić, 2020).

Interestingly, some effects that literature frequently flags—such as safety incident increases—were less prominent in some parts of your descriptive text (though they appear in Table 4.3). Recent studies (Sokas et al., 2019; Karimi, Taylor, & Goodrum, 2016)

demonstrate that workforce substitution and fatigue (from longer shifts) raise accident risks; thus safety impacts should be treated as important even when respondents do not rank them topmost. In Benin City, under-reporting of safety concerns or normalization of risk may explain its lower perceived salience; nonetheless, the literature suggests safety consequences are real and costly in both human and financial terms.

In sum, the local effect profile (delays → costs → quality decline) mirrors global patterns observed in the 2015–2024 literature, reinforcing the conclusion that shortages translate into immediate project delivery problems and medium-term sectoral competitiveness losses (Al-Bayati et al., 2020; Juricic et al., 2021).

4.7.3 Mitigation Strategies of Skilled Labour Shortage

When respondents ranked potential mitigation strategies, expanding vocational training was top (Mean = 3.89/4.60 in some questionnaire framings), followed by improving working conditions and better wages/benefits. This ordering harmonizes with recent policy and empirical studies recommending a dual focus on boosting training capacity and improving retention incentives (Martinez, 2022; Butrica et al., 2023).

The primacy of TVET and apprenticeships in respondents' views aligns with cross-national evidence: countries that expanded registered apprenticeships and modernized TVET show better craft pipelines and reduced vacancy rates (Brookings, 2021; Butrica et al., 2023). The suggestion by your respondents that government support remains necessary (though ranked slightly lower) reflects the literature's consensus that private initiatives alone are insufficient—public subsidy, regulatory frameworks, and procurement levers are essential to scale solutions (Aiyetan & Das, 2018; Neumark, Johnson, & Mejia, 2013).

Respondents' favorable view of improving wages and working conditions is consistent with studies showing that direct compensation and workplace welfare substantially reduce attrition (Hassan & Ibrahim, 2019; Juricic et al., 2021). The moderate ranking of technology adoption

in your data suggests practitioners recognize its value but may see it as complementary—i.e., technology helps productivity but must be paired with training (Kumar & Smith, 2020; van der Heijden, 2023).

4.8 Synthesis and Implications for Edo State

Taken together, the empirical results and the supporting literature point to a multi-pronged policy response for Edo State. First, immediate investments in TVET capacity and structured apprenticeship systems will address the inflow shortfall (Adebayo, 2021; Martinez, 2022). Second, targeted retention measures—competitive wages, welfare, enforceable safety standards—are critical to keep existing skilled workers from migrating (Hassan & Ibrahim, 2019). Third, technology adoption must be pursued cautiously alongside reskilling so that older artisans are not displaced but upskilled (Kumar & Smith, 2020; van der Heijden, 2023). Finally, because migration is a dominant cause, labour planning should include both short-term (temporary skilled labour sourcing where necessary) and long-term (domestic capacity building) components (Arnholtz & Wright, 2023).

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Preamble

Skilled Labour is a crucial aspect of construction projects, especially on-site need, where construction activities can be very complex and critical to execute. This chapter provides a

summary of the key findings from the study on the causes and effects of skilled labour shortage on construction works with mitigation strategies. It also presents conclusions based on the research findings and offers recommendations to enhance the utilization of skilled labour on construction works.

5.2 Summary of Findings

This study examined the impact of skilled labour shortages on construction project delivery in Benin City, Edo State. The findings reveal that the construction industry in this region is facing a significant shortage of skilled workers, which affects project efficiency, quality, and overall economic growth. The response rate to the survey was satisfactory, with 127 out of 200 distributed questionnaires successfully completed and returned. This provided a solid basis for data analysis.

The characteristics of the respondents indicate that the construction industry is male-dominated, with an overwhelming 97.6% of the workforce being male, and only 2.4% female. Educational qualifications among skilled labourers are generally low, with most having only primary education, while only a small fraction possess university degrees. The workforce is also aging, with a majority of respondents falling between the ages of 36 and 45, while younger workers between 18 and 25 are underrepresented. This suggests a declining interest in construction work among young people, further compounding the skilled labour shortage.

The availability of skilled labour in the industry is notably low, as indicated by respondents' ratings. Nearly 30% of those surveyed perceive the availability of skilled labour as very low, while an additional 24.4% rate it as low. This highlights an urgent need for interventions to increase the supply of skilled workers in the industry.

The study identified several causes of skilled labour shortages, the most significant being limited career advancement opportunities, poor working conditions, migration of skilled workers, low wages, and minimal youth participation. The absence of structured vocational

training programs and outdated training curricula were also highlighted as critical issues that limit the supply of well-trained workers. Job insecurity and a negative perception of construction careers further discourage new entrants into the workforce.

The impact of these shortages on construction project delivery is profound. Increased project costs, delays, safety incidents, and reduced work quality were among the most significant consequences. Additionally, contractors struggle with decreased competitiveness, increased rework rates, and higher operational costs. The limited availability of skilled workers also affects the ability of construction firms to take on new projects, thereby restricting industry growth.

To mitigate these challenges, respondents suggested various strategies, including the establishment of more vocational training programs, improvements in working conditions, better wages and incentives, and greater efforts to encourage youth participation in construction trades. Government support for skill acquisition was also identified as an important factor in addressing these shortages.

5.2 Conclusion

The findings of this study confirm that skilled labour shortages pose a significant challenge to the construction industry in Benin City, Edo State. The primary causes of these shortages include poor working conditions, lack of career advancement opportunities, and unattractive wages. Additionally, the migration of skilled workers to other sectors or regions, coupled with the aging workforce and low youth participation, exacerbates the problem. These factors collectively threaten the sustainability of skilled labour in the industry.

The consequences of these shortages are far-reaching, affecting not just individual construction projects but also the broader economic and infrastructural development of the region. Increased project costs, delays, and compromised quality of work ultimately reduce the competitiveness of the construction industry. To address these issues, significant efforts

must be made to improve the perception of construction careers, invest in training and education, and implement policies that attract and retain skilled workers.

5.3 Recommendations

Addressing the skilled labour shortage requires a multifaceted approach involving both industry stakeholders and government policymakers. One of the most effective solutions is the establishment of more vocational training centers that provide practical, hands-on training in construction trades. The existing training curricula should also be revised to align with modern industry needs and technological advancements. Such initiatives will equip workers with the necessary skills to meet the growing demand in the sector.

Improving working conditions is another critical step in retaining skilled workers. Many workers leave the industry due to harsh working environments, lack of job security, and inadequate safety measures. Employers should prioritize the implementation of safety regulations and ensure that construction sites provide safe and conducive working conditions. Offering stable contracts and long-term employment opportunities can also help reduce worker turnover and encourage more people to join the industry.

Wages and incentives play a crucial role in attracting and retaining skilled workers. The construction industry must offer competitive salaries and benefits, including health insurance, pension schemes, and bonuses, to make construction jobs more appealing. Performance-based incentives can also be introduced to reward skilled workers and encourage excellence.

To address the issue of low youth participation, awareness campaigns should be conducted to change the negative perception of construction careers. Schools and training institutions should collaborate with industry professionals to introduce apprenticeship programs that allow young people to gain hands-on experience in construction trades. Scholarships and financial assistance programs can also be established to encourage students to pursue careers in the industry.

Government intervention is essential in resolving the skilled labour shortage. Policies should be enacted to support skill acquisition through grants, subsidies, and tax incentives for companies that invest in workforce training. Regulatory frameworks should also be put in place to standardize training programs and ensure that construction workers receive adequate certification before entering the workforce. By creating an enabling environment for skill development, the government can help bridge the gap between industry demand and the available workforce.

Lastly, the construction industry must embrace technological advancements to improve efficiency and reduce dependence on manual labour. Automation and digital tools can be integrated into construction processes, but workers must be trained to operate these technologies effectively. Investment in continuous education and skill development programs will ensure that construction workers remain relevant in an evolving industry.

By implementing these recommendations, the construction industry in Edo State can address the skilled labour shortage, improve project delivery efficiency, and enhance the overall growth of the sector. A collaborative effort between industry stakeholders, training institutions, and government bodies is essential to creating a sustainable and skilled workforce for the future.

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APPENDIX

RESEARCH QUESTIONNAIRE

Department of Quantity Surveying,
Faculty of Environmental Sciences,
University of Benin,
P.M.B 1154, Ugbowo,
Benin City, Edo state.

Dear Respondent,

**QUESTIONNAIRE ON IMPACT OF SKILLED LABOUR SHORTAGES ON
CONSTRUCTION WORKS, IN EDO STATE**

This is to request your assistance in completing the attached questionnaire as a basis for a B.Sc. research being currently undertaken at university of Benin.

The aim of this study is to determine the impact of skilled labour shortage on construction projects in Edo state, with a view to enhancing the efficiency of project delivery.

Your response to this questionnaire would be kept confidential, and solely used for the purpose of the research.

Thank you.

Yours faithfully.

Nwangwu Joseph Emeka

IMPACT OF SKILLED LABOUR SHORTAGES ON CONSTRUCTION WORKS, IN EDO STATE

Instruction: Please, kindly fill the gaps and tick the options as appropriate, Additional information may also be provided from your wealth of experience.

Part 1: General Information on Respondent and Organization

1. Designation of respondent

- (a) Architect [] (b) Builder [] (c) Machine Operators [] (d) Q/S []
 (e) Others (specify please).....

2. Professional qualification of respondent

- (a) MNIQS [] (b) FNIQS [] (c) MNIA [] (d) FNIA []
 (e) MNIQB [] (f) FNIQB [] (g) MNSE [] (h) FNSE []
 (i) Others (please specify).....

3. Respondent's highest educational qualification

- (a) OND [] (b) HND [] (c) B.Sc. [] (d) M.Sc. [] (e) MBA [] (f) PhD []
 (g) Others (please specify).....

4. Respondent's years of working, experience

- (a) < 5 years [] (b) 5-10 years [] (c) 11-15 years [] (d) 16-20 years []
 (e) Above 20 []

Part 2.**5. Examine Causes of Skilled Labour Shortages on Construction Works**

What is your level of agreement ranking them on a scale of 5 - 1, denoted as follows: (1 – Strongly Disagree, 2 - Disagree, 3 - Neutral, 4 – Agree, 5 – Strongly Agree).

S/N	Causes	Level of Agreement				
		1	2	3	4	5
1	Lack of vocational training programs					
2	Outdated training curricula					
3	Limited access to training facilities					
4	Poor wages and lack of incentives					
5	Poor working conditions					
6	Negative perception of construction careers					
7	Aging Workforce					
8	Migration of Skilled workers					
9	Low youth participation					
10	Rapid Technological Changes					
11	Job insecurity					
12	Limited Career Advancement opportunities					

6. Assess Effects of Skilled Labour Shortages on Construction Works

What is your level of agreement ranking them on a scale of 5 - 1, denoted as follows: (1 – Strongly Disagree, 2 - Disagree, 3 - Neutral, 4 – Agree, 5 – Strongly Agree).

S/N	Effects	Level of Agreement				
		1	2	3	4	5
1	Decreased Productivity					
2	Increased project duration					
3	Higher project costs					
4	Reduced work quality					
5	Increased safety incidents					
6	Higher rework rates					
7	Reduced competitiveness					
8	Limited ability to take on new projects					
9	Increased operational costs					

7. Investigate Mitigation Strategies for Skilled Labour Shortages on Construction

Works

What is your level of agreement ranking them on a scale of 5 - 1, denoted as follows: (1 – Strongly Disagree, 2 - Disagree, 3 - Neutral, 4 – Agree, 5 – Strongly Agree).

S/N	Mitigation Strategies	Level of Agreement				
		1	2	3	4	5
1	Establishing more vocational training programs					
2	Providing better wages and benefits					
3	Encouraging youth participation					
4	Improving working conditions					
5	Government support for skill acquisition					