



ABSTRACT

On construction sites, employment is characterized by a relatively high rate of attrition, such as a gradual, natural reduction in personnel membership through retirement, resignation, or death among subcontractors as well as waged workers, resulting in a periodic shortage of skilled labour, which has an effect on project productivity. The effects of a

CAUSES OF SKILLED LABOUR SHORTAGE AND EFFECTS ON PROJECT PRODUCTIVITY ON CONSTRUCTION SITES IN LAGOS, NIGERIA.

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Introduction

The construction industry is an important developmental component of a nation's economy (Oseghale & Ata, 2008). However, its performance is heavily reliant on skilled labour, thus skilled labour adequacy and availability continued to be key factor in the construction sites. Although, Nigerian construction industry has seen a significant decrease in the number of artisans trained by both the private sector and public training centres. This trend has been accompanied by a decrease in the number of apprenticeship registered with the training providers (Marope et al., 2015). Besides, employment on construction sites is characterized by relatively high rate of attrition such as gradual, natural reduction in membership or personnel through retirement, resignation or death among waged workers and this is



skilled labour shortage on project productivity has been identified as one of the most difficult challenges that the construction industry, particularly in developing countries, faces. Therefore, this study investigated the causes of skilled labour shortages on construction sites, the effects of skilled labour shortages on project productivity, and the measures to mitigate skilled labour shortages. The questionnaire was used as a data collection tool in the study, which took a quantitative approach. Descriptive methods were used to analyse the collected data. The survey concluded that tool and equipment shortages, government policies, lack of training and retraining, and lack of motivation were factors that contributed to the shortage of skilled labour on construction sites in Lagos, while poor quality of work and time overruns were the major effects of skilled labour shortage on construction sites in Lagos, and the study's recommendations for mitigating skilled labour shortage on construction sites in Lagos included the provision of good specifications, training and retraining on a regular basis to keep up with the latest project management trends, and that employers should devise various motivational strategies for their employees.

Keywords: Construction sites, Skilled labour shortage, Project productivity

manifested in periodic shortage of skilled labour (Green *et al.*, 2020). Accordingly, studies have shown that the causes for the shortage of skilled labour is that some young people are afraid to get their hands dirty, and these young people would rather work with computers than do engineering and related professions (Green *et al.*, 2020). Likewise, shortage of skilled labour may be due to lack of adequate training, an aging workforce, a poor image of the workers, and an industry that does not appeal to many young people, thereby having effect on project productivity (Jinadu, 2011).

One of the most frequently discussed topics in general management is project productivity on construction sites. Construction is a labour-intensive industry in general, and increasing project productivity is a



primary goal (Yi & Chan, 2014). As project productivity loss results in time overruns, a negative impact on the contractor's cash flow, and a delay in project completion. The client will also have to pay more interest on the money borrowed from the bank. It is against this backdrop, the study assessed skilled labour shortage on construction sites in Lagos by:

- i. Identifying the causes of shortage of skilled labour.
- ii. Examining the effects of skilled labour shortage on project productivity, and
- iii. Determining the measures to mitigate the shortage of skilled labour on construction sites in Lagos.

The Study was limited to Lagos State Development and Property Corporation (L.S.D.P.C) where construction managers, project managers, site supervisors, foremen and artisans working on various sites were the respondents on behalf of LSDPC.

Literature Review

Skilled Labour

Skilled labour is a subset of the labour force that possesses specialized knowledge, training, and experience to perform more complex physical or mental tasks than routine job functions and it is generally distinguished by higher or specialized education, as well as expertise levels attained through training and experience, so also, it is generally associated with higher wages (Hayes, 2021). Skilled labourers range in ability from apprentices to trades foremen or supervisors. The apprentice is a beginner who is eager to learn a specific trade that is required on construction sites to ensure project productivity. This group of people can be trained in three ways: in school, in a workshop, and on the job (Ogunde *et al.*, 2017). In an increasingly competitive world, skilled labour is essential. Kazaz and Acikara (2015) stressed that skilled labour has the biggest impact on project productivity and is regarded as a true representation of productivity and realisation of the construction operations.

Causes of Skilled Labour Shortage on Construction Sites

Windapo (2016) hypothesized that most project failures were caused by a lack of skilled labour, and that sometimes the problem is not a lack of



labour, but rather a lack of workforce with cutting edge skills. Skill shortages affect not only industry, but also the country's economic and social stability. According to Akomah *et al.*(2020), the various causes of skilled labour shortage are economic change, union changes, educational changes and images, irregular and low remuneration, low motivation, high education level, increased demand for craft workers, lack of job security, lack of interest by the youth, ageing workforce, changes in skill requirements, dissatisfaction with labour organization geographical allocation, a small number of new entrants, not meeting employer expectation, poor education, poor construction industry image, high mobility, poor treatment, new technology and poor training. Shortage of skilled labour has been credited to increasing number of projects, increasing number of ageing employees, lack of sustained training and training policies, bad public view about construction workers and the unlikable nature of the industry to the youth (Oseghale *et al.*, 2015; Olsen *et al.*,2012; Lill, 2004). In another study by Bennet and McGuinness (2009), the shortage of skilled labour was credited to the negative appearance of the industry; the industry is however considered a very high risk and accident liable industry.

Effect of Skilled Labour Shortage on Project Productivity

According to Healy *et al.* (2011), skilled labour shortage is a complex phenomenon that affects construction activity performance. Consequently, Akomah *et al.* (2020) emphasized that the effects of a skilled labour shortage include: poor quality work, safety concerns, material waste, improper construction methods, errors during construction, additional costs for removing bad work, slow construction/delay in project duration, inability to manage unforeseen site problems, inability to understand drawings, and low labour productivity. A skilled worker is linked to a particular skill and a person who possess such skills has the ability to carry such special tasks and would be more productive than an unskilled person. Skilled workers cannot therefore be under-estimated as it have the required skills of eliminating conventional shortcomings of a project (Al-Mustapha, 2017).



Research Methodology

In order to collect the data, this study adopted qualitative approach before conducting quantitative analysis. The qualitative data of the study were based on a literature reviews and consisted of 14 causes of skilled labour shortage and 5 effects of skilled labour shortage on project productivity which have been examined by previous researchers, and were used to construct a structured questionnaire. The questionnaire consist of three divisions. Division A consist of respondents personal particulars such as; membership of professional bodies, years of experience, academic qualification and numbers of projects executed. In division B and C, each respondent was asked to rate the causes and effects of skilled labour shortage, respectively, on a five-point Likert scale ranging from 1 to 5, where 1 represents “Insignificant” and 5 represent “Very significant”.

The Study Population

The study’s target population involved construction site workers (project managers, site supervisors, foremen, and artisans) engaged in informal contracting in Lagos State, Nigeria. This population was chosen in order to obtain reliable information. Table 1 shows the population of respondents. This became the sample frame from which the sample size was drawn.

Table 1. Population of Respondents

S/N	RESPONDENT	NUMBERS
1	Project Managers	40
2	Site supervisors	50
3	Foremen	10
4	Artisans	250
	TOTAL	350

Source: - Lagos State Development and Property Corporation

Sample Size

The number of observations or replicates to include in a statistical sample is referred to as sample size. The sample is a subset of the



population; it is a small subset of the population that is meant to be representative of the entire population (Kibuacha, 2021).

There are several approaches to determining sample size, according to Glenn (2013). These include conducting a population census, imitating the sample size of similar studies, using published tables, and applying formulas to calculate a sample size. Because of the large study population, Glen (2013) formula method was used in this research work.

$$n = N / (1 + n(e)^2)$$

Where n = sampling size

N = the population

e = error limit (0.10)

This equation provides a simplified formula to calculate sample size. At 95% confidence level, represent the level of precision, N is the population size and n = size.

Therefore $n = 1510 / (1 + 1510(0.10)^2) =$ Respondents

$$n = 350 / (1 + 350(0.01))$$

$$n = 350 / (1 + 3.50)$$

$$n = 350 / 4.50$$

$$n = 77.77$$

$$n = 78$$

This means that for a population of 350, and with 95% confidence level, 78 sample size is required for this study.

Sampling Techniques

Sampling is the statistical process of selecting a subset (referred to as a "sample") of a population of interest to make observations and statistical inferences about that population. However, due to feasibility and cost constraints that the researchers cannot study entire populations; simple random technique was employed. The simple random type of probability sampling techniques were chosen because they involve contributions from a defined state that are chosen at random and given an equal chance of representation of the study population. It also provides the respondent with an equal opportunity to contribute to the subject matter.



Method of Data Analysis

The data obtained was analysed using descriptive statistics of frequencies, percentages, and mean scores.

Data Presentation, Analysis and Discussions

Distribution of Questionnaire

As shown in Table 2, a total of 78 questionnaires was distributed to construction site workers (project managers, site supervisors, foremen, and artisans) in Lagos State and 60 well completed questionnaire were retrieved and as such used for the analysis.

Table 2. Distribution of Questionnaire

Distribution Questionnaire	Frequency	Percentage (%)
Questionnaire retrieved	60	76.92
Questionnaire not retrieved	18	23.08
Questionnaire distributed	78	100.00

Source: - Researchers' Field Survey

Category of Projects Undertaken

Table 3 shows the types of projects completed by respondents, some of whom had combined experience, for a total frequency of 60. This revealed that 95.00% of the population was involved in building projects, while 5% were involved in civil engineering projects.

Table 3. Category of Projects Undertaken

Project Undertaken	Frequency	Percentage (%)
Building projects	57	95.00
Civil engineering projects	3	5.00
Heavy engineering projects	-	

Source: - Field Survey, 2019



Respondents Years of Experience

According to Table 4, 46.67 percent of respondents had 1-5 years of experience, 38.33 percent had 6-10 years of experience, 6.67 percent had 11-15 years of experience, and 8.33 percent had more than 20 years of experience. These also indicated that respondents had adequate construction work experience. As a result of their experience, they will have a positive impact on the subject matter of this study.

Table 4. Respondents Years of Experience

Years of experience	Frequency	Percentage (%)
1 – 5 years	28	46.67
6 – 10 years	23	38.33
11 – 15 years	4	6.67
16 – 20 years	-	-
Above 20 years	5	8.33

Source: - Field Survey

Causes of Skilled Labour Shortage on Construction Site in Lagos

Table 5 shows the mean score and ranking of the factors which were assessed by construction site workers (project managers, site supervisors, foremen, and artisans) in Lagos state with respect to the causes of skilled labour shortage. The results shows that tools and equipment shortages ranked first with a mean score of 4.23, closely followed by government policy with a mean score of 4.15 and ranked 2nd, lack of training and retraining with a mean score of 3.98 and ranked 3rd, lack of motivation with a mean score of 3.76, work discipline with a mean score of 3.60, poor communication and co-ordination with a mean score of 3.05, unfair wages with a mean score of 3.01, inadequate experience with the mean score of 2.90, work satisfaction with a mean score of 2.76, cultural differences and organizational setup both ranked tenth with a mean score of 2.63 followed by change in education, and the least was misunderstanding between labour and superintendents with a mean score of 1.91. The findings in this study are similar to that of Akomah



(2020); Golbahram & chetty (2017) where some of these factors were mentioned.

Table 5. Causes of skilled labour shortage on construction sites in Lagos

I	Identified Factors	Mean Score	Ranking
1	Lack of training and retraining	3.98	3 rd
2	Inclement weather	2.08	17 th
3	Lack of motivation	3.76	4 th
4	Tools and equipment shortages	4.23	1 st
5	Poor communication and co-ordination	3.05	6 th
6	Unfair wages	3.01	7 th
7	Supervisor absenteeism	2.13	16 th
8	Payment delay	2.01	18 th
9	Accidents	2.41	13 th
10	Inadequate experience	2.90	8 th
11	Misuse of time schedule	2.31	15 th
12	Misunderstanding between labour and superintendents	1.91	19 th
13	Health and safety conditions	2.50	12 th
14	Work Satisfaction	2.76	9 th
15	Work discipline	3.60	5 th
16	Cultural differences	2.63	10 th
17	Organizational setup	2.63	10 th
18	Government policy	4.15	2 nd
19	Change in education	2.55	11 th
20	Economic factor	2.38	14 th
	Poor industry image	2.38	14 th

Source:- Field Survey

Effect of Skilled Labour Shortage on Project Productivity

Table 6 displays the mean score and ranking of the effects of skilled labour shortage on project productivity. The results revealed that poor work quality is ranked first, with a mean score of 3.40. Time overrun comes next, with a mean score of 3.15. Delay in project schedule was



ranked third with a mean score of 2.88. This is followed by cost overruns (2.78), building project abandonment (2.61), contract failure (2.53), and difficulties controlling and managing (1.95). These findings can be corroborated with those in previous studies (Varadarajah, 2020; Akomah *et al.*, 2020; Golbahram & chetty, 2017; Utting, 2009).

Table 6. Effect of skilled labour shortage on project productivity

I	Identified Impact	Mean Score	Ranking
1.	Cost overrun	2.78	4 th
2.	Time overrun	3.15	2 nd
3.	Poor quality of work	3.40	1 st
4.	Abandonment of building project	2.61	5 th
5.	Delays in project schedule	2.88	3 rd
6.	Contract failure	2.53	6 th
7.	Difficulties in controlling and managing	1.95	7 th

Source: Field survey

Ways of Mitigating Skilled Labour Shortage on Project Productivity

Table 7 shows the mean score and ranking of the ways to mitigate skilled labour shortage on project productivity. The analysis showed that provision of good specification is ranked first with a mean score of 4.68. This is closely followed by good motivation with a mean score of 4.60. Provision of tools and equipment was ranked third with a mean score of 4.43, which is followed by increasing skills and experience of workforce with a mean score of 4.36 was ranked 4th. Good working condition with a mean score of 4.33 was ranked 5th. Involvement of experienced labour with a mean score of 4.25 was ranked 6th, while, carryout inspection all the time was ranked 7th with a mean score of 4.15. Commitment to project was ranked 8th with a mean score of 4.15, clear information and communication was ranked 9th with a mean score of 4.03, and the least is good relationship between labour and superintendent with a mean score of 3.96. Some of these factors were outlined in Golbahram & chetty (2017).



Table 7. ways of mitigating shortage skilled labour on project productivity

	Factors	Mean Score	Ranking
1	Increasing skills and experience of workforce	4.36	4 th
2	Clear information and communication Channel	4.03	9 th
3	Provision of tools and equipment	4.43	3 rd
4	Involvement of experienced labour	4.25	6 th
5	Good motivation	4.60	2 nd
6	Carryout inspection all the time	4.15	7 th
7	Good relationship between labour superintendent	3.96	10 th
8	Good working conditions	4.33	5 th
9	Commitment to project	4.15	8 th
10	Provision of good specification	4.68	1 st

Source: Field survey

Conclusion

The study set out to examine the causes of skilled labour shortage on construction sites in Lagos, examining the effect of skilled labour shortage on project productivity and to determine the measures to mitigate skilled labour shortage. It was concluded from the survey that tools and equipment shortages, government policies, lack of training and retraining and lack of motivation were causes of skilled labour shortage on construction sites in Lagos. While, Poor quality of work and time overrun were the major effect of skilled labour shortage on project productivity, and the ways of mitigating skilled labour shortage on construction sites in Lagos from the study were provision of good specification, good motivation and provision of tools and equipment.

Recommendations

The study recommended that there should be provision of adequate tools and equipment, training and retraining of workers to keep them abreast with the current trend project management. Furthermore, employers should come up with various motivational strategies for their workers.

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