

# Effects of Skill Gap on Labour Productivity on Construction Sites in Abuja

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## Abstract

Human resources in many developing countries are of insufficient quantity and quality to encourage high rate of fiscal and infrastructural development. The manpower mostly needed in large quantity in Building construction industry globally and in Nigeria are artisans and skilled labour. This research work aimed to evaluate the effects of skill gap on labour productivity on construction site in Abuja in order to improve their productivity. To achieve this, a quantitative research was carried out via a disseminated 36 structured questionnaires to construction practitioners in Abuja. 30 questionnaires out of 36 sent out were retrieved giving a return rate of 87.71%. The data analysis was carried out descriptively using percentage analysis, mean ranking and RII of the SPSS version 20.0. The results revealed out of the relevant skills needed for construction work, technical skills are the major skill required in construction production process. Also on the effect of skill gap, the study discovered that poor workmanship has the highest effect on construction industry follow by increased in project labour cost which affect the overall budget of the project. The research recommends that necessary trainings such as apprenticeship training and on the – job should come to fore by construction firms and be made important among the other training within construction industry. Also, construction firms should ensure recruitment of workers who are highly skill technically, supervisory wise and have multi skilling. The research concluded that there exist skill gap which affects labour productivity which can be curbed with adequate implementation of the training method from the research outcome and ensuring that the major construction skills are employed from the onset.

**Keywords:** Effects, Skill gap, Labour, Productivity, construction firms

## 1.0 INTRODUCTION

The construction industry occupies a sensitive locus, as it performs a conspicuous part in the frugality of every country (Achuenu, *et al.*, 2000). All around the world is the cry for adequate skilful construction workers.

Skill gaps refer to the occurrence whereby the skill extents of workforces are inadequate to meet the obligations of their present work (McGuinness and Ortiz, 2015). Lerman (2013) also make certain that skills are the principal basis of high productive feat and profitable well-being. In the same vein Zannah *et al.* (2017), stated that the height of skilled workers' low performance has been comprehended to be a major issue which play a part in unproductive construction projects. Odediran and Babalola (2013), opined that the type of manpower mostly needed in large quantity housing construction in Nigeria and globally are artisans and labour. Okuntade (2014) observed that despite the prominence of construction skilled worker to the industry, an enormous number of them are nevertheless untrained, despite the fact that many of the construction industry globally have started making tremendous implementation of skill acquirement plan to meet with the demand change in technology presents.

For the construction industry in Nigeria to give out a cost effective and successful production outcome, the industry has to engage experience, skill operatives such as reliable, qualify and capable craftsmen. The contractor coordinates and also directs his craftsmen (operatives) which according to Dantong (2007) comprise the key labour force of the contractor. However, Dantong (2007), further observed that the problem of the construction industry is how to resolve the must for a recruitment of skilled workforce of great productivity in carrying out a streamlined successive tasks and retention of a sizable highly skilled workforce.

Despite the level of the workforce the industry is still experiencing skill gap (Bilau *et al.*, 2015). Wahab (2000), observed that qualitative and assessable deficiencies in workmanship are some of the influences against the achievement of success in the Nigerian construction industry. In profiling improvement to the problem of skill gap as it relate to productivity in the construction industry many authors have looked into it in different direction. Of such are Usman *et al.* (2012), who evaluated the training of contractor's craftsmen for productive improvement in Nigeria. Embarking on the training of construction craftsmen will go a long way in curtailing these problems in project delivery in Nigeria. Nevertheless despite this substantial research in this area their still exist the problem of skill gap in the construction industry in Nigeria. This therefore necessitates the need for this research to assess the past work on labour productivity with attention on the effect of skill gap effects of skill gap on labour productivity on construction sites in Abuja.

### **1.1 Aim and Objectives**

This study aim at evaluating the effects of skills gap on labour productivity in the construction industry with the view to improve productivity.

To realise the aim of this study the following objectives were carried out:

1. To identify the skills required in managing the production process of building projects.
2. To determine the implications of skills gap in construction industry
3. To identify the best training methods that will optimize the productivity of construction craftsmen in the Nigeria construction industry.

### **1.2 Scope of the study**

The scope of this research work includes the identification of major skills peculiar to building construction project, the effects of skills gap on labour productivity in the construction industry which covers craftsmen, using Abuja as the study area.

## **2.0 LITERATURE REVIEW**

### **2.1 Skills Issues in the Building Sector**

Alemi (2010), emphasized that Nigerian metropolises with the exclusion of the reserve of the rich and influential are regarded as poor quality structures, poor layout and streets access, lack of vital utility facilities, insufficient safety, and social services. Apparently, deficiencies exist between the skills of vocational workers and those required to meet the needs and expectations of employers in the Building sector. This can be ascribed to the declining stock of skilled construction workers and the influx of unskilled, incompetent and discontented workers who see the construction firms as a last option (ITF, 2014). The construction industry is growing but it seems the stock of competent skilled construction workers has reduced (Odusami and Ene, 2011).

### **2.2 Skills Required for the Production Process**

Skills required for production process are basically of two types; technical skills and advance skills (Adavbiele, 2013). Adavbiele (2013) created a protracted list of technical skills needs in the Nigerian Building sector. The skills are: Building drawing skills, Surveying, landscaping and site preparation skills, Foundation skills, Ability to use machines for construction, Ability to use hand tools for practical work, Brick and block Laying skills, Roofing skills, Masonry skills in building Concreting and reinforcement skills, Carpentry and Joinery skills, Final Finishes skills and Plumbing skills. Shrekar and Tatikonda (2016) identified the major

categories of skilled workers in the construction industry as; mason, painter, steel fitter and plasterer. Adewale *et al.* (2014) listed categories of skilled workers which include; carpenter, bricklayer, painter, iron bender and plumber. Oseghale *et al.*, (2015) asserted that, frequent used skilled workers in the construction industry include; carpenters, bricklayers, bar bender, plumbers and painters where their services are required most in construction projects. Uchitelle (2009) identified common skilled workers as electricians, plumbers, painters, carpenters and bricklayers, bar benders, tile fixers, plant operators, welders, mechanics, and steel fixers. Offei-Nyako *et al.* (2014) stressed that, skilled workers vary from mason, carpenter, tile worker, steel worker, painter, electrician and plumber.

In addition, there are also advance skills that can greatly impact the construction industry; advance skill such as technical skills. multi-skilling, supervisory skills, team-working skills, health and safety regulation compliance, customer relations are still on the reduced level and should be maximally cultivated for better productivity in the industry.

### 2.3 Implication of Skill Gap in the Building Sector

Bilau *et al.* (2015) opined that skills shortage has influence on project performance and Oke *et al.* (2019), stated that skill gap has impact on workmanship, upsurge in construction costs, and reduced budget performance. Common indicators of Skills issues are poor workmanship and Building Failure (Oke *et al.*, 2019). Nigerian cities with the exception of the enclave of the rich and powerful are characterised by poor quality structures, poor layout and streets access, lack of essential utility services, inadequate security, and social services (Alemika, 2010).

### 2.4 Skill Training Methods of Optimizing the Productivity of Construction Craftsmen

Dermol and Cater (2013) who discovered that training can have a momentous and positive impact in labour output in the construction industry. Kazaz, Ekrem, and (Sardar, 2008) observed that the best which can be applied to get a productivity boom by construction management is the selection of the right people who have been duly groomed through trainings to control certain functions.

However, (Ying 2009) found that one of the greatest obstacles to implementing a quality training program for any organization is lack of funding. However, this come with the implication of contractors being scared of including the cost of training in their bid package for fear of upshot in the contact sum which can place them at a disadvantage with their competitors. Trade associations cannot establish or implement training until they have a commitment from contractors to support and pay for training.

## 3.0 RESEARCH METHODOLOGY

Quantitative approach was used for this study to gather information from the construction practitioners practicing in Abuja. The specimen unit of this study is the construction firms who have ongoing project in Abuja. The sample size of 36 from a population size of 40 was obtained using Yamane's formula.

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

where; n is the sample size, N is the population size, and e is the level of precision at 95% confidence level with P=0.05. The essential information for the study was gotten through dissemination of well-structured questionnaires used as data collection instrument. Questionnaires were self-administered to construction firms in Abuja. However, 30 completed questionnaires were returned. Hogg *et al.* (2015) determined a sample size of 30 from a random

sampling as adequate stating that the smaller the variance, the smaller is the sample size needed to achieve a given degree of accuracy.

The data collected was analysed using descriptive analysis; frequencies, percentage analysis, Mean rank and Relative Importance Index (RII) with the aid of SPSS version 20.0. Data presentation was in form of tables.

Respondents opinions were obtained and they were ranked from the positive rating to the negative rating for example the respondent were told to indicate the training mechanisms use in their organisation using a likert scale of 1-5. Where 1 = not at all and 5 = much implemented. Respondents opinions were obtained and they were ranked from the positive rating to the negative rating for example the respondent were told to indicate the effects of skill gap on project using a 5-Likert point, where 1 = strongly disagree and 5 = strongly agree. In using the ranking method, the relative importance index (RII) were obtained using the formula,  $RII = \Sigma W / A \times N$ , where W is weight, N is number of respondents and A is highest score.

#### 4.0 RESULTS AND DISCUSSION

Table 1: Qualification of respondent

Qualification of respondents	Percentage	Frequency	Year in service in the organisation	Percentage	Frequency
HND	10.0	3	1-5	63.3	19
B.SC/B.TECH/B.ENG	60.0	18	6-10	16.7	5
PGD/MASTER	20.0	6	11-15	16.7	5
DOCTORATE	10.0	3	16-20	3.3	1
Total	100.0	30	Total	100.0	30

Table 1 shows the qualification of respondents. Of all the thirty (30) respondents, the majority of respondents had (B.sc/B.Tech/B.Eng) making up 60%, followed by PGD/Master with 20%, while HND and Doctorate both have an equal percentage of 10%. This shows that the entire respondents are qualified academically and they have the understanding of the study been carried out. The respondent's years of experience in their Organisation are discussed as followed of the thirty (30) questionnaires returned, nineteen (19) of the respondents have experiences of 1-5 years and these accounted for the most dominant group with 63.3%. The second group 6-10 and 11-15 are having 16.7%, while the last group 16-20 represent 3.3%.

Table 2: Designation of respondents

Designation of respondent in the establishment	Frequency	Percentage
Builder	6	20.0
Architect	4	13.3
Chief executive/managing director	2	6.7
project manager	2	6.7
Cost Adviser	4	13.3
Engineer	11	36.7
Project officer	1	3.3
Total	30	100.0

The respondents are of different designations, of the thirty respondents, 36.7% are Engineers in their organisations, 20% are Builders in their organisation, Architects and Cost Adviser have 13.3% to represent their organisations, while Chief executive/Managing Directors, Project manager are of equal percentage of 6.7%, and Project officer with one (1) frequency which represent 3.3%.

Table 3: Skills employed in construction process

S/N	Skills employed in construction production process	Mean rank	Rank
1	Technical skills	0.83	1
2	Supervisory skills	0.63	2
3	Multi- skilling	0.27	5
4	Team- working skills	0.47	3
5	Health and Safety	0.03	8
6	Regulation and compliance	0.23	6
7	Customer relations	0.31	4
8	Others	0.13	7

Table 3 shows that the major skill employed in construction production process is technical skills (0.83) and this was followed by supervisory skills with 6.3 and the least on the rank is health and safety skill.

From Table 4 it was discovered using Relative importance index, Poor workmanship is the major effects of skills gap on construction project with 0.713, closely followed by increased project labour cost with 0.706 and the least rank is reduced quality training/meeting.

Table 4: Implication of skill gap on construction project

S/N	Item	1	2	3	4	5	Scores	RII	Rank
1	Constructability problems	8	3	4	8	7	93	0.620	5
2	Poor workmanship	5	5	2	4	14	107	0.713	1
3	Rework	5	5	5	11	4	94	0.626	4
4	Reduced budget performance	6	2	7	5	10	101	0.673	3
5	Improved schedule performance	12	2	4	5	7	83	0.553	8
6	Reduced conformance to specification	6	5	5	8	6	93	0.620	5
7	Reduced time needed to rectify defects	10	5	2	7	6	84	0.560	7
8	Increased project labour cost	4	3	5	9	9	106	0.706	2
9	Reduced quality training/meeting	11	4	5	5	5	79	0.526	10
10	Increased profit rate of project	10	3	6	6	5	83	0.553	8

The result shows that poor workmanship is the direct effects of Skill Gap on any construction project because the skilled required for a particular task matters a lot on any project success which can also lead to rework and causes increase in project labour cost. This confirmed the findings of Bilau *et al.* (2015) who opined that skills shortage has influence on project performance and Oke *et al.* (2019), they stated that skill gap has impact on workmanship, upsurge in construction costs, and reduced budget performance.

Using mean ranking, Table 5 shows that the best method of training craftsmen is on the job training which is more practical and effective with mean rank of 0.80, followed by Apprenticeship training 0.77 and the least training method is vestibule school 0.07.

Table 5: Methods of training for craftsmen

S/N	Methods of training for craftsmen	Mean rank	Rank
1	Class room training	0.30	7
2	Trade Group training	0.50	5
3	Apprenticeship training	0.77	2
4	On the- job training	0.80	1
5	Crafts apprenticeship courses	0.57	4
6	Vestibule school	0.07	10
7	Conference or Discussion Method	0.43	6
8	Sink and Swim method	0.17	8
9	Time release training	0.13	9
10	Apprenticeship programmes	0.67	3

This is in consonant with Dermol and Cater (2013,) who discovered that training can have a momentous and positive impact in labour output in the construction industry.

### **SUMMARY OF FINDINGS**

Based on the results from the analysis of the data collected via the questionnaires the findings were made:

- i. Skill gap still exist in construction industry and the major implication on construction industry is poor workmanship from construction craftsmen which had the highest RII ranking of 0.713 among the ten (10) listed effects of skill gap on labour productivity.
- ii. Technical skill was identified as the major skill required in building production among the seven (7) listed skills employed in construction production process for this study.
- iii. While supervisory skills is important to put in check the activities of the craftsmen on the site for best performance and effective productivity.
- iv. The best training method identify to curb skill gap is on- the job training which had 0.8 mean rank followed by apprenticeship training for the craftsmen.

### **CONCLUSION**

The challenge of skills gap in the construction industry is not peculiar to Nigeria. But the absence of reliable data on the supply and demand for skills is the case and is of utmost concern to stakeholders in the sector across the country. Skills gap needs to be address by every parties involves in construction starting from the Government, construction firms, professional bodies, contractors and the craftsmen to boost productivity and this can be realised by adequate training.

### **RECOMMENDATIONS**

1. Necessary training such as apprenticeship training and On the – job should come to fore by construction firms and be made important among the other training within construction industry.
2. Construction firms should ensure recruitment of workers who are highly skill technically, who have supervisory skill and also multi skilling
3. Management should ensure that they put in place a system that can check and also blocks every avenue that results into poor workmanship, increased project labour cost and Reduced budget performance
4. Relevant stakeholders in the built environment should come together and form policies that will enhance the development of skill for craftsmen.
5. All other factors that causes skills gap as identify in this study and related literature should be look into and properly address.

This study suggested the following areas, for further research, Skills Gap Analysis in the Construction Industry in Nigeria, The Impact of Best Training Methods for Craftsmen in the Construction Industry in Nigeria.

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