

# Unqualified Skilled Workforce Involvement in Construction Process in South East Nigeria

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**Abstract---** Skilled workforce competency is one of the critical aspects of labour productivity that requires unbiased attention for effective project delivery in the construction industry. The hazards of involving unqualified skilled workforce for construction process have been considered as one of the major contributors to low productivity in the construction industry. This research is aimed at exposing the dangers of involving unqualified skilled manpower in the construction process in South- East Nigeria. The active professionals in the Nigerian construction industry were assessed using a well-structured questionnaire. 250 questionnaires were distributed to the construction professionals and 213 (85.2%) of the total number of the questionnaire distributed was successfully retrieved and analysed. The means and Relative Importance Index (RII) of the data collected from the respondents were calculated to determine the leading factors responsible for the engagement of unqualified skilled workforce for construction processes, criteria for selecting skilled workforce, and the impact of unqualified workforce in the construction process. Based on the opinions of respondents it was revealed that; there is a significant involvement of the unqualified skilled workers in the South -East Nigeria which the consequent evidence is the incessant building collapse and poor quality of project delivery in most areas. Therefore, the study recommended that there is urgent need for the inauguration of skill certification centres where skilled workers will be tested and certified after their training before being deployed into construction process. On-the-job training and retraining exercise should also be scheduled by the management of every construction industry for regular technological innovation updates and experience sharing for better performance of the skilled workers.

**Keywords---** Project Delivery, Unqualified Workforce, Construction Industry, Construction Process, Skilled Workers.

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## I. INTRODUCTION

The construction industry globally is concerned with the low productivity of the construction products due to the shortage of workforce (Mohammed, et al, 2017). This challenge is severely felt by the developing countries. Most construction companies are under pressure to meet up with the project delivery time, thereby involving the services of unqualified worker force for construction process (Mistri, Chitranjan, & Jayeshkumar, 2019). The involvement of the unqualified skilled workers in the construction process is evident in most rework and waste of materials, regular site accident and regular collapse of building witnessed in Nigeria construction industries today (Tunji-Olayeni et

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al., 2017). Obviously, the problem of the construction industry is not workforce but skilled workforce. The quality of the construction product is dependent on the full involvement of the skilled workers from the commencement of the project to the handover (Ahmad Zaki, Mohamed, & Yusof, 2012). The vision of Nigeria joining the league of developed countries in 2020 has been greatly jeopardized with the low construction products and high level of poor quality of the construction products (Bilau&Sholanke, 2015).

However, the menace of the unqualified skilled workforce performance must be addressed as way of improving the quality of construction product and avoid unnecessary contract delays that can be associated with site accident (Wong & Soo, 2019). In Nigeria today the issue of collapsed building is becoming a reoccurring decimal, killing so many people and leaving a lot on life time disability. The wastages of material, labour and general economic value of the investments not withstanding (Ede, 2016). The rate of building collapse in Nigeria in the past years has been so alarming but the frequency in 2019 motivated this study. Already Nigeria has recorded ten (10) collapses and over sixty (60) collapses across the nation in the past four years. Ibrahim, Suleiman, & Bello, (2019) in their survey in 2019 on so many causes of building collapse in Nigeria, ranked poor workmanship first as the major cause of building collapse.

Construction labour force is majorly classified into two categories, the skilled and the unskilled workforce. Skilled labour comprises of the internship (people undergoing skill training), the foremen and the supervisors. This class of workforce can basically undertake their training through any of the three means; recommended schools, vocational training centres, and workshops. The skilled workers are vital components of the workforce as they constitute the greater number of the workforce that determines the success of any project. The sensitivity of their contribution makes it vital for internship stage before an important task is allowed.

Skilled workers are generally known with their abilities to independently take up complicated task and in most cases combine their knowledge plus skills and experience through abstract thinking in resolving rigorous task.

According to the Nigerian institute of building, a skilled worker is an academically or technically trained individual in specific area of trade and must be registered in any of the professional body in other to undergo professional training upon graduating from school or training centres before undertaking any construction activity. However, the unqualified skilled workforce is a skilled worker who lacks professional competency and experience to handle any sensitive construction activity in their line of trade. Common skilled manpower includes electrician, plumber, painter, carpenter and mason, bar bender, tiller, plant operator, welder, mechanics, and steel fixer. In the recent time, most skilled workers does not undergo the necessary internship training after graduation before taking part in construction process (Al-Emad, Abdul Rahman, & Khan, 2018). It is of great concern that currently some construction industries hire the services of the unqualified worker due to the shortage of the certified skilled worker for construction activities and the consequences are already showing with the number of building collapses so far recorded across Nigeria (Abdelnaser, Olojotuyi, & Hussin, 2016). These categories of skilled workers are considered and classified in this study as unqualified skilled workers. Most times used because of the shortfall in the certified skilled workers. Therefore, this study is geared towards exposing the dangers of using such category of workforce for construction process.

## **II. LITERATURE REVIEW**

### ***2.1 Skilled Workers in the Construction Industry***

The construction labour is generally classified into two; skilled and unskilled labour (Ogbenjuwa, Egbu, & Robinson, 2018) . The skilled manpower is classified into apprentice, foremen and supervisor. Each category has its limit to acceptable involvement in the construction process. According to Adewale, Siyanbola, & Siyanbola, (2014), apprentice is referred to as individuals who out of interest enrolled to learn a particular trade as a career in the construction industry and are not allowed to take part in any vital activity in the construction process.

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Skilled workers are generally known with their abilities to independently take up complicated task and in most cases combine their knowledge plus skills and experience through abstract thinking in resolving rigorous task (Fernando, Gayani, Gunarathna, & M.A.C.L., 2016). It is of great concern that currently some construction industries hire the services of the apprentice due to the shortage of the certified skilled worker for construction activities and the consequences cannot be overemphasized. Nigeria Common skill areas in the construction trade includes electrician, plumber, painter, carpenter and mason, bar bender, tiller, plant operator, welder, mechanics etc.

### ***2.2 Basic Considerations for Skilled Workers Selection in the Construction Industry***

Ling & Tan, (2015) described the need for certain criteria to be considered before engaging skilled workers. This is to ensure high productivity with less site issues that are capable of interrupting the progress of the project. The criteria are in addition to the normal academics or technical training as stated below

- Good mental ability
- Job knowledge
- Task proficiency
- Good communication
- Job experience

### ***2.3 Impact of Unqualified Skilled Workforce in the Construction Process***

The challenges of skill shortage have posed a lot of threat to so many countries and has tremendously affected the economy of most developing nations (Ullah, Mohamad, Hassan, & Chatteraj, 2019). A drop in the production of the construction sector affects the economy of the nation to a great deal. This skill shortage especially in Nigeria does not suggest that there is a shortfall in the labour force in the construction industry in Nigeria, but the shortage is basically on the certified skilled workers (Oseghale, Abiola-Falemu, & Oseghale, 2015). As a result of the shortage of the certified skilled workers most construction firms are beginning to make use of the unqualified skilled workers for vital responsibilities in the construction process (Ogundipe, Olaniran, Ajao, & Ogunbayo, 2018).

The major impacts of the involvement of unqualified skilled workers are as listed below.

- Frequency of site accidents
- Building collapse
- Rework
- Material waste
- High cost of project delivery
- Poor quality of projects
- Contract litigation

#### 2.4 Contributing Factors to Unqualified Skilled Workers Engagement in Construction Process

Involvement of unqualified skilled workers in construction process is hinged on certain factors. Contractors working to meet up with some rigid deadlines, and at the same time maintain relevance in the industry in terms profitability and meeting clients' needs, will resolve to making use of the available workforce even without prior test of their competence. The basic factors that lead to engaging unqualified skilled workforce is illustrated in figure 1 below.

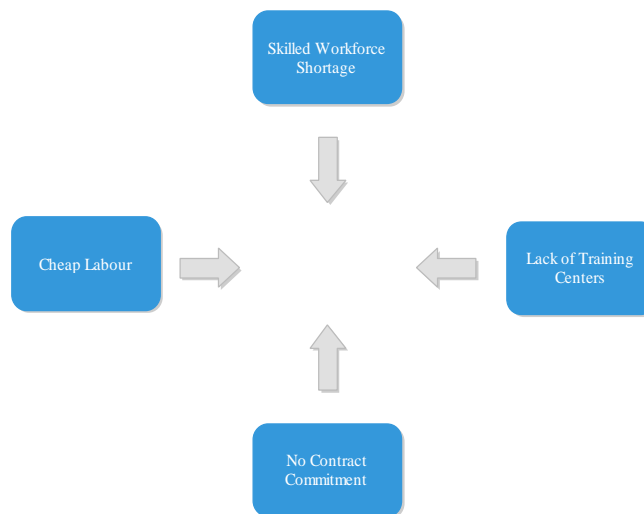


Figure 1: Factors responsible for the engagement of unqualified skilled workers in construction process

*Skilled Workers Shortage:* The pressure of achieving the contract durations with less certified skilled workers may lead to contractor's decision to try the apprentice category. This decision most times has causes a lot of construction havoc. Construction managers falls into using less skilled workers when the qualified skilled workforce is scarce and they have rigid deadlines to meet up.

*Cheap Labour:* This factor most times is one of the leading reasons with the greedy contractors wanting to make more profits. The Nigerian system has made it that every contractor wants to maximize profit and especially when the junk party of the project funds has been diverted into bribing construction project decision makers.

*Lack of Training Centres:* This is another contributing factor, that cause skill shortage in south east Nigeria. Most of the training centres are no longer functional and as such makes it difficult for interested individuals to get sound trained.

*No Commitment:* Most unqualified skilled workers lack the capacity to bargain. Therefore, it makes it easier for the contractors to use such workers because he is not held liable for and constructions firms to engage and relief them after a particular contract. This is because the unqualified workers may not know their rights as provided by the National Joint Industrial Council (NJIC).

### III. METHODOLOGY / MATERIALS

The study took exploratory approach obtaining its secondary data through review of related literature associated with the dangers of using unqualified skilled man power for construction process. A well-structured questionnaire was administered to selected professionals from the study area, close investigation of some collapsed building to ascertain the major causes of the collapses were ensued by the researcher through interview. Selected construction sites were visited to observe the extent of material wastage and rework caused by unqualified workers were also made. The questionnaire was designed in Likert Scale format and distributed among the construction professionals such as the Architects, Builders, Quantity Surveyors, and Engineers in the South-east Nigeria. Majority of the respondents are registered professionals in the following institution and organizations;

1. Nigeria institute of building (NIOB)
2. Ministry of works, and housing development
3. Capital development authority

The internal consistency of the research instrument was determined using Cronbach's alpha test, and the relative importance index of the different measurement variables were determined for the purpose of achieving the aim of this study.

### IV. RESULTS AND FINDINGS

The data gathered from respondents have been carefully presented and analyzed in this section. Figure 2 below presents a summary of the responses of the administered questionnaires. It could be noted that 85.2% of the questionnaire administered were received properly filled which represents the total of 213 questionnaires returned. However, only 14.8 % representing 37 of the questionnaires that was not returned as shown below;

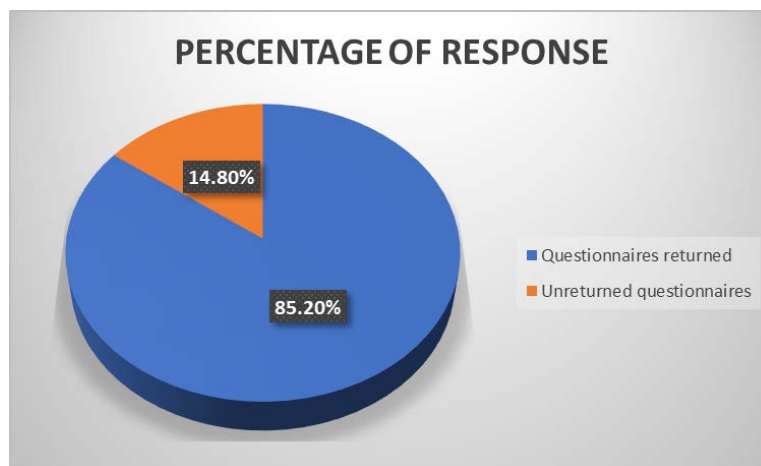


Figure 2: Percentage responses of the respondents

The individual professions of the respondents are as captured in figure 3 below. 30.5% of our respondents are Architects, Builders 35.7%, Engineers 19.2% and Quantity Surveyors 14.6%. The majority of the respondents are Builders who are basically the professionals in Nigeria responsible for building production management and maintenance. They are the core professionals in the field directly involved with the management of the workforce. They therefore stand a better chance to understand the level of effects of engaging unqualified workforce for any construction process.

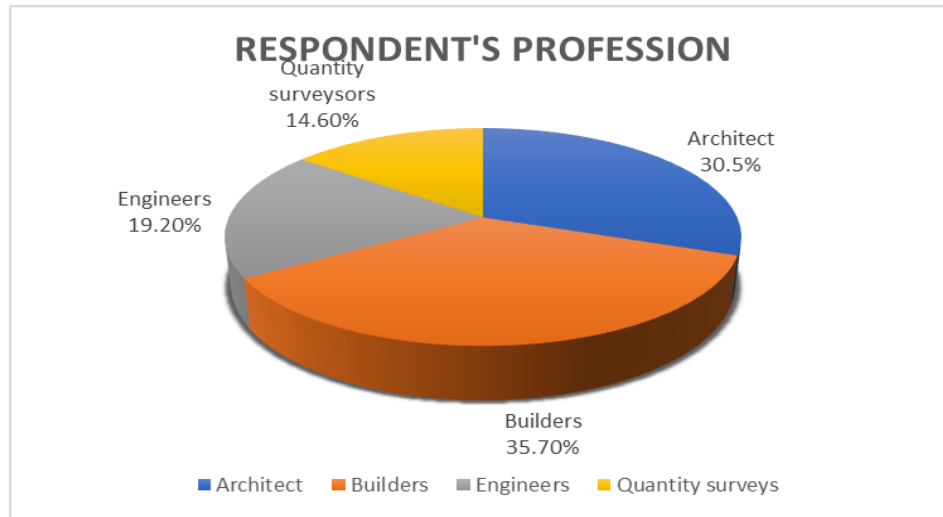


Figure 3: Professions of Respondents

Table 1 below represents the years of experience of the respondents and their knowledge on the dangers of engaging unqualified skilled worker for construction works. In Nigeria, the older professionals tend to go into consultancy and other less stressful construction businesses due to age. This explains why the majority of the respondents that are still in the field has 1-20years experience. The higher percentage of the respondents indicated that they are conversant with the dangers associated with unqualified workforce engagement. 149 (77.0%) of professionals are conversant of dangers involved, 24.0% are slightly conversant while only 6.0% are indecisive.

Table 1: Years of Experience of Experience and professional knowledge of Respondents

Years of experience	Frequency	Percentage	Cumulative
1-10yrs	105	49.3	49.3
11-20yrs	67	31.5	80.8
21-30yrs	41	19.2	100
<b>Professional knowledge</b>			
Conversant	149	77.0	77.0
Slightly conversant	51	24.0	94.0
indecisive	13	6.0	100

#### 4.1 Evidence of Unqualified Skilled Workforce in Construction Process

The bar chart in figure 4 below shows the evidence of unqualified skilled workers involvement in the construction process. The survey revealed that there is clear evidence of incorporation of unqualified workforce in construction sites by some construction companies to maximize profit. The statistics shows that about 31.9% of the

respondents reported that there is a clear evidence of involvements of the unqualified skilled workforce in some construction companies in the south-region of Nigeria. Explaining further, it is important to understand the major ways construction workers are engaged in Nigeria including the study area.

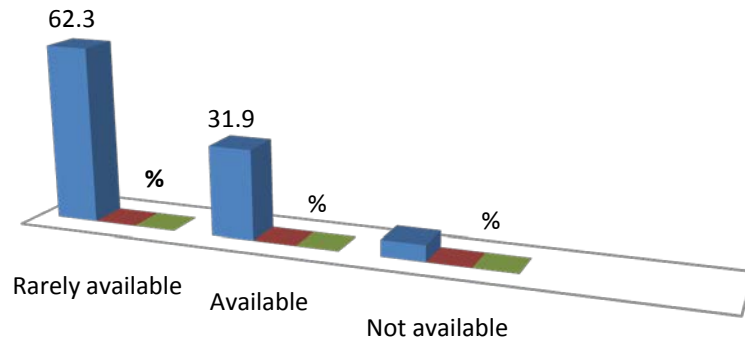


Figure 4: Availability of Unqualified skilled manpower in construction process

Construction workers are engaged through different means in the south east Nigeria. From the information gathered from the respondents, the different means of engaging construction workers are as highlighted in the pie chart in figure 5 below, showing the percentage level of adopting the different means. Majority of the engaged construction workers are hired based on the recommendation from their previous employers (29%) or based on the quality of the workmanship displayed in the previous engagement. The information also indicated that a high percentage (27%) hire workers from Artisan Market even without any prove of their capability and skilfulness. This explains more why the 31.9% of the available responses of the unqualified skilled manpower by the respondents (see figure 4 above).

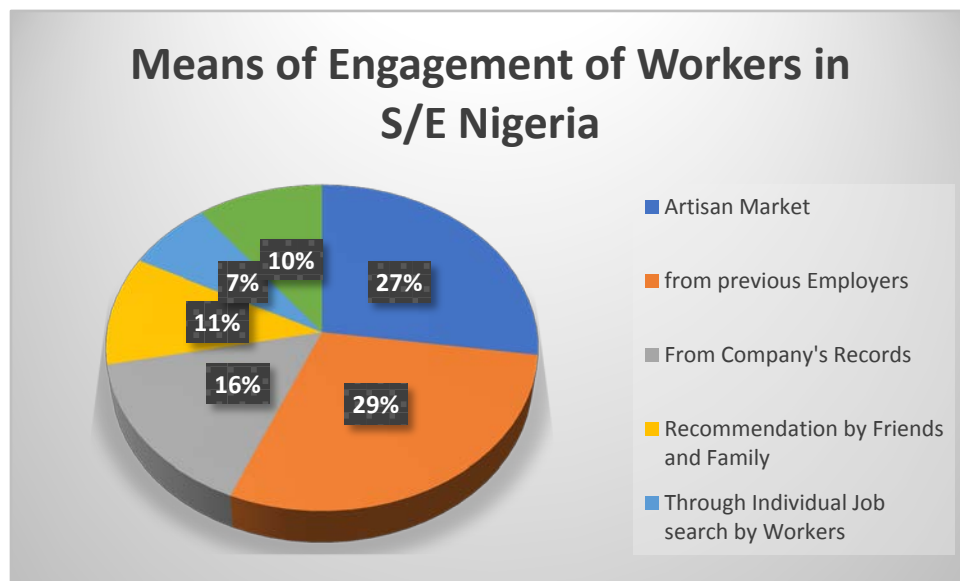


Figure 5: Means of Engagement of Construction Workers in South East Nigeria

#### 4.2 Analysis of Investigated Variables

The internal consistency of the research instrument was evaluated using Cronbach’s alpha test to determine the reliability of the instrument. Cronbach’s alpha is calculated using the formula;

$$\alpha = [k/k-1] [(sy^2 - \sum si^2) / sy^2]$$

where, k = number of items or variables, sy<sup>2</sup> = variance associated with the observed score,

$\sum si^2$  = sum of all the variances for each item. Reliability coefficient ( $\alpha$ ) ranges from 0 to 1.

The relative importance index of each of the variables measured were determined in order to ascertain which of the factors or variables that has higher impact than the other. Relative importance index is calculated using the formula;

$$RII = \sum w/AN = \frac{5n_5 + 4n_4 + 3n_3 + 2n_2 + 1n_1}{5N}$$

Where; w is the weighting given to each factor by the respondent, ranging from 1 to 5.

n<sub>5</sub>, n<sub>4</sub>, n<sub>3</sub>, n<sub>2</sub>, and n<sub>1</sub> is the number of respondents for strongly agree, agree, undecided, disagree, and strongly disagree respectively. A is the highest weighting (that is 5 in this study), while N is the total number of respondents. Relative Importance Index ranges from 0 to 1.

Table 2 itemized the reliability coefficients and RII of the measured variables and arranged in the order of ranking of the individual factors from the highest RII to the least. The ranking indicates the level of impact of the factor or variable.

Table 2: Reliability Coefficient and Relative Importance Index of the Measured variables

S/n	Leading Factors to Unqualified Skilled Workforce Engagement in Construction process	Cronbach's alpha ( $\alpha$ )	$\sum w$	AN	RII	Ranking
1	Skilled workforce shortage (SWS)	0.96	928	1065	0.87	1ST
2	Lack of training centers (LTC)		874	1065	0.82	2ND
3	Cheap labour (CL)		721	1065	0.68	3RD
4	No commitment (NC)		702	1065	0.66	4TH
<b>Areas of less proficiency of Unqualified Skilled Workforce During Construction Process</b>						
1	Lack of critical thinking and technical contribution	0.97	919	1065	0.86	1ST
2	Poor site practice		868	1065	0.82	2ND
3	Non-compliance to safety signs and regulations		862	1065	0.81	3RD
4	Poor plants and equipment handling		837	1065	0.79	4TH
<b>Criteria for Selecting Skilled Workforce</b>						
1	Ability to combine knowledge experience and skill for difficult task with good communication skill	0.93	960	1065	0.90	1ST
2	Technical competency in the use of relevant tools and equipment		940	1065	0.88	2ND
3	Good communication skill and ability to new challenges and task		762	1065	0.72	3RD
4	Sound health condition		757	1065	0.71	4TH
<b>Impact of Unqualified Workforce in The Construction Process</b>						
1	Building collapse	0.96	960	1065	0.90	1ST
2	Rework, material waste and cost over run		940	1065	0.88	2ND
3	Poor quality of projects		873	1065	0.82	3RD
4	Frequency of site accident		860	1065	0.81	4TH
5	Contract litigation		817	1065	0.77	5TH



The reliability coefficients of the variables indicate good internal consistency of the instrument, and hence very reliable. The variables measured is therefore further discussed.

#### ***4.3 Assessment of Factors that Lead to Engaging Unqualified Skilled Manpower for Construction Process***

Certain factors have contributed to engaging workers that does not have the requisite skill to undertake a given task in the construction process. The reliability coefficient for this measurement is 0.96 and the relative importance index of the factors is 0.87, 0.82, 0.68, and 0.66 for SWS, LTC, CL, and NC respectively (see table 2). The calculated RII for the factors indicated that skilled workforce shortage (SWS) is rated as the first factor that lead to unqualified skilled manpower engagement in construction process, while No commitment between the engaged workforce and the employer is the rated as the least factor. Conclusively the major reason that leads to the engagement of unqualified skilled workers in the construction process in south east Nigeria as illustrated in the responses of the respondents is the shortage of certified skilled workers. Employers resort to using other means such as going to the artisan market (A cluster of workers with different trades). These workers are hired even without the prior knowledge of their capabilities by the employer. There is no basis of confirming the skill or qualification of the worker and the employer takes the risk even when the quality and level of their productivity is not certain.

It was equally discovered that there are some basic areas of concern during construction process which the workers hired without adequate skill display their incompetence and jeopardizes the effectiveness of the construction site management. The areas of concern as discovered is as discussed below.

#### ***4.4 Areas of Less Proficiency of Unqualified Skilled Workforce During Construction Process***

The reliability and RII table above also highlighted the ranking of the areas unqualified skilled workforce (USW) are deficient during project execution. The ranking showed that lack of critical thinking and technical contributions is a crucial factor to be considered. The unqualified skilled workers lack the requisite critical thinking ability to make any meaningful contributions technically. Other areas in the order of their importance for consideration includes poor site practices of the USW (RII=0.82), Non-compliance to safety signs and regulations by the USW (RII= 0.81), and Poor plants and equipment handling (RII= 0.79). When the USW lack these basic attributes, which are very pivotal for project success, it is paramount that quality attention is paid to the hiring policy of construction workforce in order to remedy the deplorable dispositions of workers. This is necessary based on the findings of this study to increase productivity, and enhance the effectiveness of the construction process management. Hence, the basic criteria as indicated by Ling & Tan, (2015) such as Good mental ability, Job knowledge, Task proficiency, Good communication and Job experience should be adequately adhered to better productivity and efficiency.

#### ***4.5 Considerations for Selecting Skilled Workers for Construction Projects***

In line with the basic yardstick to be considered as already highlighted by Ling & Tan, (2015) in their research, this work went further to truly ascertain these criteria in Nigerian concept. Considering the basic criteria for selecting qualified skilled workers to undertake any task in a construction site in Nigeria; the first requisite criteria is to pass through formal or informal training followed by other consideration as highlighted in table 2 above in their order of importance.

The survey result revealed that the first consideration for selecting skilled workers for construction activities is in the following sequence; Ability to combine knowledge experience and skill for difficult task with good communication skill (RII= 0.90), Technical competency in the use of relevant tools and equipment (RII= 0.88), Good communication skill and ability to new challenges and task (RII= 0.72) and Sound health condition of the worker (0.71).

These four basic considerations is in conformity with that of Ling & Tan, (2015) and should be a checklist for selecting skilled workers after they have passed through their formal or informal training. It is therefore recommended that serious attention should be given to these criteria and should be incorporated in training curricula for construction workers.

Neglecting these criteria has severe consequence of having higher number of less informed workers in the industry and the effect cannot be over emphasized.

#### ***4.6 Impact of Unqualified Skilled Workforce in Construction Process***

The impact of unqualified skilled workforce involvement in construction process is also ascertained as indicated in the table in order of highest impact to less considered impact. According to the survey result; Regular building collapse (RII= 0.90), rework, material waste and cost overrun (RII= 0.88), poor quality of projects (RII= 0.82), frequency of site accidents (RII= 0.81), and contract litigation between clients and contractors (RII= 0.77) were ranked first, second, third, fourth and fifth respectively. This outcome of the survey seriously shows that the dangers of using unqualified skilled workforce in the construction process is more than the gain and should be avoided no matter the level of pressure.

These impacts were confirmed and validated through a session of interview with few construction professionals. The interview also reviewed that other negative impact of engaging unqualified skilled workforce for construction works includes and not limited to;

1. Delays in construction projects
2. Low productivity of labour
3. Project abandonment due to significant construction errors

Investigation made in selected project sites in the south-east Nigeria also confirmed that most of the material wastages and reworks were as a result of lack of technical know-how of the engaged workforce.

Examining further on the Job Training for unqualified skilled manpower in construction sites, Figure 6 shows the commitment of the construction companies to offer job training to the unqualified workers. From the respondent report it was revealed that higher percentage of the construction companies do not offer job training after engaging the unqualified skilled workers.

From the survey 70.20% of the respondents are of the opinion that constructions companies do not train this category of workers to enhance their proficiency after hiring them while 29.80% affirms that some of the companies offer training after hiring the unqualified workers.



Figure 6: Job Training for Unqualified Skilled Workforce in Construction Sites

## V. CONCLUSION

From the findings of this study, it is evident that a significant number of the construction industries in the south-east Nigeria engage unqualified skilled workforce during the construction process. The engagement of this set of workers was traced to some factors like profit maximization, shortage of skilled workforce, lack of training centres to train and produce quality skilled personnel, less commitment in their employment contracts. This class of workers has done more harm than good in the construction sites, and is evident in most site challenges encountered currently in most construction sites in the areas of building collapse, frequent site accidents, rework, material waste, high cost of projects, poor quality of projects and contract litigation between clients and contractors. Therefore, it is highly necessary to evaluate construction workers' qualifications and skills prior to engagement in construction process. This will seriously aid in abating the negative impacts associated with using unqualified skilled workforce for any construction activity.

It is therefore recommended that skill certification centres be inaugurated where skilled workers will be tested and certified after their training before they can be allowed to take part in construction process. On the job training and retraining exercise should be scheduled by the management of every construction industry for regular technological innovation updates and experience sharing for better performance of the skilled workers. Most construction employers in Nigeria pay less attention to improving workers skill after engagement but this study has revealed that there is serious need to incorporate on-the-job training in the conditions of engagement of skilled workers in the Nigerian construction industry. This will in turn increase tackle the issues of shortage of qualified manpower in the industry. Project productivity and improvement in project quality with less injuries and accidents around the construction site will equally be achieved. Also, there is need for regular competency awareness through the help of the social media and radio/ Television jingles financed and sponsored by the government on the dangers of using the unqualified workforce for any construction activity.

The basic criteria highlighted in table 2 should serve as a checklist for the selection of qualified workforce for any construction process in the south-east Nigeria and can be adopted and included in National Joint Industrial Council (NJIC) conditions of engagement of construction workers.

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