

## ADDRESSING THE CHALLENGES OF ACHIEVING STANDARD WORKMANSHIP IN CONSTRUCTION PROJECT DELIVERY

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### ABSTRACT

Workmanship has constituted a serious challenge in construction project execution. Many of the artisans engaging in construction project do not acquire adequate training which have been identified as one of the major causes of poor workmanship in construction projects delivery. This research examines challenges of achieving standard workmanship in construction project delivery. The study utilized questionnaire survey, a quantitative technique to collect data from the participants. A total number of hundred (100) questionnaires were administered to respondents but only eighty (80) were returned and used for the research. The data was analyzed using Statistical Package for Social Scientists (SPSS). Means score and relative importance index were the specific descriptive tools employed. The results show inadequate training as the most ranked factor attributed to poor standard of workmanship in construction project delivery. The study concludes with a set of recommendations for addressing the challenges of poor workmanship in construction project delivery.

**Keywords:** Challenges, Standard, Workmanship, Construction, Project, Delivery

### 1. INTRODUCTION

Workmanship refers to the level of skills with which a job is accomplished or a product or an item is finished. Construction skills essentially include bricklaying, carpentry, plumbing, ironwork, electrical. Later the term 'workmanship' also started to apply to engineering and manufacturing (Porter S, 2005). Construction work or project involves complex and interrelated processes. It requires different parties or stakeholders coming together to work towards achieving the goal of delivering a construction project. These include the client, contractor, architect, engineers, quantity surveyor, and tradesmen; like bricklayers, carpenters, iron benders etc. The quality of the finished construction project or output is largely dependent on the degree or level of skills of the artisans employed on the project and also on supervision among others.

The quality of construction project could be deemed poor or inadequate when the project goals cannot be achieved; the work is not meeting the stated specifications and the users' need or customer expectation is not satisfied. Quality challenges on construction projects are encountered most of the time as a result of poor workmanship. The world over, construction disputes come up among parties to the contract, for instance, between client and contractor due to construction defects arising from poor workmanship. For instance, in Malaysia, according to Abdul Razak et al. (2010) quality of the certain construction projects has not always been met. In the opinion of Kazaz and Birgonul, (2005) the satisfaction of quality in the construction projects delivery has always been a challenge also in Turkey.

Prominent among other factors responsible for non-achievement of quality standard of workmanship in construction project delivery include the use of poorly-skilled labour, use of emerging contractors, and a lack of commitment to quality achievement. Oni (2018) argued that construction artisan skills training has been neglected and no longer appreciated due to image problem in the society. Young people that are supposed to enroll into construction skills training now prefer to opt for riding commercial motorcycles as a means of economic survival. Apart from the fact that this option is associated with very high risks, it is also not sustainable at all. The two pathways for training construction artisan, namely the traditional apprenticeship system and the formal school system (Technical colleges) both are currently poorly patronized (Oni 2018)

In Nigeria, a good number of construction projects carried out are found to be having with poor workmanship issues. This development is attributed to inadequate training, poor supervision and working under pressure. The effectiveness of the construction industry in every country depends on the quality of the trained workforce to be able to achieve the quality work required (Muya, et al. 2004; Porter, 2005). According to David, (2010). Poor quality in construction projects is a common phenomenon in Nigeria. The most important aspect of a quality project is the workmanship; unfortunately, poor quality workmanship can destroy projects already put in place (Iwaro and Mwasha, 2012). According to Kasim, (2009). most contractors in developing nations of the world are grappling with the challenges of poor workmanship in construction project delivery. Certain percentage of the payment due to the contractors are usually being held back as guarantee against early defects appearance due to poor workmanship. (Shittu et al. (2013).

## 2. METHODOLOGY

Quantitative research design was adopted for this research, and particularly, questionnaire survey was utilized. A review of extant literature was carried out to supplement this. With regards to the instrument for data collection, a well-structured questionnaire was designed for the purpose. The questionnaire has five point Likert scale, indicating the range of the options provided. This was essentially crafted to achieve the goal of the research. Participants in the study were served the questionnaires manually. A total of one hundred (100) questionnaires were distributed while only eighty (80) were retrieved. The data obtained from the survey was analyzed using (SPSS) software. Descriptive statistics were utilized; and specifically, Means Score (MS) and Relative Importance index (RII) were the main tools used for the analysis of this study.

## 3. FACTORS RESPONSIBLE FOR POOR WORKMANSHIP IN CONSTRUCTION

This section identifies and discusses the some variables that are connected to the factors responsible for poor workmanship in construction projects. They are as follows:

**Design Errors-** One of the typical design error commonly committed happen in an attempt to avoid exceeding initial construction costs estimate. Construction cost considerations occupy a very important role in designing buildings. Adjusting downward the size of columns, reducing the initial specified size of reinforcement bars and foundations details are the prevalent design mistakes in construction. Bilau,(2015). Submitted that this development will lead to uncertainty in the future where the structure cannot withstand the load and may finally fails. Sometimes faulty design is also a result of misjudgment, leading to assumptions or decisions that are not in line with the actual behavior of the structure.

**Inadequate skills and experience** - Oni (2014) submits that this is a major factor in this workmanship matters. Many construction skills trainees are not patient enough to fully acquire the needed competence level. This is not unconnected with the quest for money mindset predominant among our youths nowadays. Additionally, assessment of trainees before they are finally released to the market to operate independently is not standardized and also not regulated well by government. Due to paucity of construction workmen in the industry, some are engaged to carry out operations in areas they do not have sufficient experience

**Communication challenges-** In the recent times, the industry has witnessed an upsurge of migrant artisans from neighbouring countries like Togo, Benin Republic. They are common in many construction sites in Lagos and Ogun states. This phenomenon has created another challenge in the area communication (Oni 2014). According to Al-Hazmi, (2005), different language between the foreign craftsmen and local supervisors causes the communication barrier on the site. This is because many foreign workers are not able to speak in local language fluently. This consequently led to misunderstanding thus negatively impact workmanship standard of the project involved.

**Working under pressure-** Atkinson,(2007).opined that insufficient time caused the construction projects executed to be rushed. A number of “show houses” on the site were required for many construction projects. Many concurrent works were carried out and inadequate checking had been carried out by the senior managers sequentially caused by the speed of working. As a result, the deficiency of workmanship had been happened. In short, working under pressure causes low quality of workmanship in construction.

**Inadequate Supervision-** ithin Nigerian context, construction works are labour intensive. An estimated figure of 2.5 million people are engaged in construction works in the country. However, vast majority of these workers are not qualified and unskilled or partially trained. Therefore, additional burden of supervision and thorough oversight is required to ensure compliance to standard. So if the supervision is not very heavy right from inception to completion of each operation, probability of poor workmanship is very high. In Nigeria, construction site supervision is a very essential aspect of the work. The failure to plan the work and communicate with other sufficiently is essentially connected to increasing amount and cost of rework expended on project works.

**Low wages of artisans-** Insufficient remunerations have been a significant factor contributing to the low performance and efficiency of artisans in the Nigerian construction sector. And this ultimately impacting their drive and willingness to carry out their duties. As a result, this diminishes the overall productivity and quality of work on projects. In line with Salisu (2006) viewpoint, it is observed that contractors do not compensate skilled workers fairly, which can be attributed to the limited resources and unfavorable economic conditions caused by ineffective leadership. Consequently, contractors are inclined to offer unfair wages, leading to a demotivated workforce and prompting them to seek employment in organizations that offer more attractive remuneration packages.

**Delay in payment of artisans’ wages.** - According to Hickson and Ellis, (2006). payment delays typically happens due to cash flow issues challenges experienced by the client or contractor. It may also be as a result of poor planning and management of project funds. Regardless of the cause of the payment delay, experienced workers tend to cause confusion and conflict, which then hinders the progress of the work. Ghoddousi, (2007). posited that late payment to

contractors has a negative impact on the artisans working on site. It is a well-known fact that if construction artisans do not receive their wages as at when due, they feel dissatisfied and this can invoke disloyalty and dwindle their commitment to their duties. Definitely, this would bring down productivity.

**Lack of standard scale for artisan's wages-** Within Nigeria environment, there is no standardized scale or regulated wages for the skill construction artisans. Thus, differential wages are paid in different states and construction sites across the nation. This situation is responsible for migration of artisans from an area of low wages to the places where they will get better remunerations for their labour. According to Aina and Adesanya , (2006). lack of incentive schemes in place for construction workers is one big factor also that demotivate construction site workers in a organization. Abdulsalam, (2007). argued that, incentive schemes that would promote environmental responsibility with financial benefits should be provided to encourage more flexible working practices among the site operatives and also to promote an improved work-life balance to skilled workers. Non-implemented motivational incentives in most organizations, usually lead to to low performance of the skilled workers on their job Bernardin, (2005) asserted.

**TABLE 1:** Demographics Of The Respondents

Demographics of the Respondents		
Variables	No of Respondent	Percentage (%)
<b>Profession</b>		
Architecture	18	22.6
Building	33	41.3
Civil Engineering	6	7.5
Quantity Surveying	15	18.8
Urban Planning	4	5.0
Land Surveying	4	5.0
Total	80	100
<b>Educational Level</b>		
ND	0	0.00
HND	27	33.3
BSc	21	26.3
Masters	20	25.0
PhD	12	15.0
Total	80	100
<b>Years of Experience</b>		
1-5 years	19	23.8
6-10years	43	53.8
11-15 years	11	13.8
16-20 years	5	6.3
20 years and above	2	2.5
Total	80	100.0

**Source: Researcher's Field survey, 2022.**

The table 1 above shows with regards to the respondents' professions, that 22.5% are Architects 41.3% are Builders; 7.5% of the respondents are civil engineers, , 18.8% are Quantity surveyors while and 5% are urban planners and land surveyors respectively. Under the educational level of respondents as zero percent ND holders, 33.8% are HND holders, 26.3% of the respondents are the BSc level, 25% of the respondents are also hold MSc while 15% of the respondents hold doctorate degree.

Also shown in the table that 23.8% of respondents has experience ranging between 1-5 years, 53.8% has experience ranging between 6-10 years while 13.8% of the respondents has experience ranging between 11-15 years and 6.3% had experience ranging between 16-20years while 2.5% experience ranging between 20 years and above. This shows that considerable percentage of the respondents has a better experience of the constructing the challenges of achieving standard workmanship in construction project delivery.

**TABLE 2:** Factors Responsible For Poor Workmanship In Construction Project Delivery

FACTORS		SUM	$\Sigma FX$		MEAN	RII	RANK
Inadequate training		80	442		4.93	1.11	1 <sup>st</sup>
Poor supervision		80	388		4.85	0.97	2 <sup>nd</sup>
Inadequate skills and experience		80	382		4.78	0.96	3 <sup>rd</sup>
Design error		80	380		4.75	0.95	4 <sup>th</sup>
Working under pressure		80	367		4.59	0.92	5 <sup>th</sup>
Lack of standard salary scale for skilled workers.		80	355		4.44	0.89	6 <sup>th</sup>
Language barrier to communication		80	346		4.32	0.86	8 <sup>th</sup>
Unsuitable construction material		80	338		4.23	0.85	9 <sup>th</sup>
Low wages of skilled workers		80	317		3.97	0.78	10 <sup>th</sup>
Unsuitable construction equipment		80	316		3.95	0.79	11 <sup>th</sup>

**Sources: Researcher's Field survey, 2022.**

Based on Table 2 above, the research also attempted to find out the factors which may be responsible for poor workmanship in construction project delivery. It can be observed that inadequate training with mean 4.93 was ranked as the top most factors responsible for poor workmanship in construction project delivery, while poor supervision with mean 4.85 is second rank, while inadequate skills and experience with mean 4.78 is the third rank, while design error and working under pressure with mean 4.75 and 4.59 were the fourth and fifth rank respectively, while other factors were ranked as least common factors responsible for poor workmanship in construction project delivery.

It can be concluded that all these factors listed above are all fantastic responsibility for poor workmanship in construction project delivery.

**TABLE 3:** Implications Of Poor Standard Of Workmanship On Construction Project Delivery

IMPLICATIONS		SUM	$\Sigma FX$		MEAN	RII	RANK
Inadequate value for money		80	482		4.88	1.21	1 <sup>st</sup>
Internal staining, mold growth and fungal on external walls		80	468		4.85	1.17	2 <sup>nd</sup>
Increased total life cycle cost on the project		80	456		4.80	1.14	3 <sup>rd</sup>
Deterioration of roof covering		80	451		4.79	1.13	4 <sup>th</sup>
Death of occupants		80	396		4.77	0.99	5 <sup>th</sup>
Poor aesthetics		80	393		4.75	0.98	6 <sup>th</sup>
Total collapse of structure		80	383		4.74	0.96	7 <sup>th</sup>
Project abandonment		80	378		4.72	0.94	8 <sup>th</sup>
Unsafe structure		80	370		4.63	0.51	9 <sup>th</sup>
Cost overrun		80	360		4.5	0.90	10 <sup>th</sup>
Cracking		80	364		4.55	0.91	11 <sup>th</sup>
Injuries to occupants		80	352		4.40	0.88	12 <sup>th</sup>

**Researcher's Field survey, 2022.**

The general observation of the above analysis was based on the factor responsible poor workmanship in construction project delivery. The respondents were requested to rank from 1 to 5 (i.e. strongly disagree, Disagree, Neutral, Agree, strongly agree). The means of each of the implication were computed and used to rank the implications with respect to their significant contribution to the implications of poor standard workmanship in construction project delivery. From the result which is shown in table 3 above, inadequate value for money with mean 4.88 is the first rank while internal staining, mold growth and fungal on external walls with mean 4.85 was ranked second, while increased total life cycle cost on the project with mean 4.80 is third rank. While deterioration of roof covering and death of occupants with mean 4.79 was ranked fourth. Death of occupants has a mean of 4.77, poor aesthetics with a mean of 4.75, total collapse of structure (4.74), project abandonment with mean of 4.72 were ranked fifth, sixth, seven and eight. Other factors were ranked behind them. It can be observed that the percentage of respondents who are strongly agree and agree are greater

than the respondents who are neutral, disagree and strongly disagree hence all this implications listed above has a role to play in various construction project delivery.

**TABLE 4:** Approaches For Mitigating The Challenges Of Poor Workmanship In Construction Project Delivery

APPROACHES	SUM	$\sum FX$	MEAN	RII	RANK
Proper manpower management	80	416	4.94	1.04	1 <sup>st</sup>
Improved supervision on site	80	398	4.82	0.99	2 <sup>nd</sup>
Adequate training and education	80	383	4.79	0.96	3 <sup>rd</sup>
Launching of initiatives to improve the quality and availability of instructors.	80	376	4.71	0.94	4 <sup>th</sup>
Proper communication between parties involved	80	370	4.74	0.94	4 <sup>th</sup>
Proper design	80	379	4.65	0.95	6 <sup>th</sup>
Train the trainers to create new knowledge and improve teaching standards.	80	372	4.63	0.93	7 <sup>th</sup>

**Sources:** Field survey, 2019.

Table above shows the frequency distribution, the mean, the relative importance index and the ranks of the respondents on the research of the approaches for mitigating the challenges of poor workmanship in construction project delivery. It can be observed that proper manpower management with mean 4.94 is the ranked first; while improved supervision with mean 4.82 is ranked second which was suggested should be second approach for mitigating the challenges of poor workmanship in construction project delivery. While Adequate training and education and launching of initiatives to improve the quality and availability of instructors in training need in a mission mode with mean 4.79 and 4.71 were probably rated as third and fourth rank respectively.

While Proper design and Train trainers to create new knowledge and improve teaching standards and proper communication between parties involved with mean 4.74 and 4.65 and 4.63 were also ranked respectively as the least common strategies for bridging skills gap for delivering green buildings in Nigeria.

#### 4. CONCLUSION

This study investigated the challenges of achieving standard workmanship in construction project delivery with a view of mitigating them, the result above shows that inadequate training, poor supervision, design error, inadequate skills and experience, language barrier to communication, unsuitable construction equipment's, working under pressure, low wages of skilled workers, delay in payment of skilled workers wages. This research advocates formulation of policies that would regulate construction workmen wages. It also suggests that incentives be provided to encourage more interest of youth in enrolling in construction skills training. Site supervision also should be given adequate provision in planning for projects

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