

EFFECT OF SUPERVISION ON CONSTRUCTION PROJECT DELIVERY IN ABUJA, NIGERIA

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ABSTRACT

The role of the industry in the achievement of projects that are economically, socially and environmentally sustainable cannot be over-emphasized. It is therefore necessary for the construction industry to focus on the improvement of supervision of its operatives in construction project delivery. This study therefore, examined the effect of quality supervision of construction operatives on project delivery in Abuja, Nigeria. A survey research design method using the quantitative approach was adopted for the study. The population for this study comprises construction professionals that involves in the execution of building projects in Federal Capital Development Authority (FCDA) and Efab Properties Limited in Abuja. The population size for the study was 70. Since the population size was less than 200, a census of the total members of the population (70) structured questionnaires were administered among construction professionals while 57 were retrieved at 81% returned rate. Descriptive method of data analysis was adopted using Mean Item Score (MIS). The findings from the study revealed that proper manpower management, material handling and transport waste management, and design interpretation with MIS value of 4.66, 4.64 and 4.59 respectively are the most effective factors that lead to quality supervision. The study concluded that construction firms should spend more time and resources in improving its manpower management, material handling and transport waste management, and design interpretation. Thus, the study recommended that construction industry should focus on the training and improvement of its operatives, since the poor manpower management is identified as the effective factor of quality supervision.

Keywords: Manpower, Training, Operative, Supervision, Project, Delivery.

INTRODUCTION

The construction industry an important component of every economy as it plays a significant role in the economy of developing countries (Kheni, 2008). The industry occupies a dynamic spot in the economy of every country because of its imperative influence to the progression of development (Oyewobi, 2011). This industry by nature, is said to have peculiar problems and special requirements. The quality of site supervision has a major influence on the overall performance and efficiency of construction project. Inadequate supervision is believed to be one of the major causes of poor project delivery. Alwi, Keith, and Sherif (2001) also argue that the quality of site supervision in any country is directly related to the supervisor's level of experience gained through formal training. There has been enough evidence to show that most of the constructions done in Nigeria are done without proper supervision at construction site. It has also been observed that government concentrates in issuing the documents and collecting the required fees or the reward as the case may be instead of monitoring procedures (Madu, 2005). Projects are used in all economic and non-economic fields as mean of organizing the activity, aiming the achievement of desired objectives (Beleiu *et al.*, 2019).

Thompson and Gilbert (2011) defined supervision as a process of watching over. Some of problems confronting project supervision in the recent time which has to do with the discrepancies between the design and construction process when construction operatives are at the centre of it

all because of their inconsistent knowledge application and skills during building production process. Windapo (2012) identified critical working conditions; commitment of all project contributors; prearrangement of site layout; inadequate top management support and indeterminacy of project team as the major factors affecting supervision of project. He also emphasized that where projects failures occur due to scarce skilled or experienced tradesmen. Construction labour requires highly skills in accordance with level of the competencies, the type of work, and role complexity (Windapo, 2012). According to Ahmad, Sutrisno, Muhamad and Suparji (2017), professionalism of both experts and skilled workers is one of the key to effective and successful implementation of building and civil engineering construction project.

A lot of researchers have worked on supervision in the construction industry with regard to the various aspects of construction and came up with different views and opinion. Gidado (2016) worked on the "resultant effect of poor supervision in building project in Nigeria". He opined that construction activities, tasks in every project phase are only achievable by adhering to the project documents and by extension adequate supervision. Gidado (2016) also reveal supervision has a positive influence on project quality delivery and he recommended that there is need for further study to identify, assess and examine other resultant effects of other factors affecting the quality of building projects especially the ultimate collapses in the Nigeria's construction Industry. Ahmad *et al.* (2017) worked on "enhancing the competitiveness of skilled construction workers through collaborative education and training" opined that the competence profile of construction workers is low. Ogundipe, Olaniran, Ajoa, and Ogunbayo (2018) assessed the impact of quality supervision on construction operatives project delivery in Nigeria. They postulated that though skilled operatives are knowledgeable in their area of specialisation but adequate supervision on application of materials and other components of building would help them to correct quite numbers of error before it's escalated into exorbitant damages on sites. According to Ogundipe *et al.* (2018), quality of a project is not a luxury but a critical implementation of the project plans with adequate supervision to ensure project success. Adenuga (2013) believed that every party to projects has suitable roles to perform if quality service delivery must be attained. Ogunde, Eseho, Joshua, Bamidele, Amusa and Ogunde (2017) opined that the most prominent factors that affect project delivery were inadequate managerial skills, poor project planning and unavailability of funds.

None of the above cited studies researched specifically on the effect of quality supervision of construction operative on project delivery in Abuja, Nigeria. This is the gap this research intends to fill. This study is centred on the effect of quality supervision of construction operatives on project delivery in Abuja, Nigeria with the view of improving project delivery in Nigeria.

LITERATURE REVIEW

Construction Industry

The construction industry often acts as a catalyst to stimulate the growth of a nation's economy (Ali and Rahmat, 2010). Construction industry all over the world is often perceived to be the life wire of its respective economy as it cuts across all aspects of human activities (Ayangade, 2009). The Nigeria construction industry is not an exception to this.

Construction Project Supervision in Nigeria

Nnadi (2018) identified poor construction quality to be a major cause of building collapse in Nigeria. Thompson and Gilbert (2011) defined supervision as the process of overseeing and watching over a work or set of activity. Nnadi (2018) also agree that weak foundation, usages of substandard materials and promotion of quackery among construction operatives. Supervision is a method for invigorating, controlling, enhancing, reviving, empowering and regulating group of workmen with the expectation of seeking collaboration among them for the successful execution of their supervision tasks. Nigeria is one of the fast-developing countries in the world with large number of people engaged in construction projects. However, the workers are skilled and unskilled. The success of completing any construction project depends heavily on the quality of supervision. Naturally, the quality of supervision is dependent upon the supervisor's skill. A supervisor is usually given authority and responsibility for planning and execution of the work. Supervisors are managers, whose major activities focus on leading, coordinating and directing the work of others to achieve group goals. (Shinde, Gupta and Desai, 2014). In addition, they argue that a successful supervisor has to deal with several skills such as management skills, human relation skills and skills in leadership, motivation, and communication and organization behaviour. Nnadi (2018) postulated at every stage of construction, there is a need for expertise supervision and monitoring to reduce risk during construction processes.

A successful project is very much depending on the construction professionals to act as an effective manager (Omran and Hussin, 2009). Zulu and Chileshe (2008) observed that majority of local contractors 'poor performance has negative implications in competing with other contractors. Jarkas and Radosavijevic (2013) outlined factors that affect productivity and workers motivation as delay payment, lack of a financial motivation, rework, change in design at construction stage, overcrowding, quality level of drawings, inexperience supervisors, setting wrong target and materials shortage on site. Supervision a collective problem solving medium and as such is one of the most effective tools of ensuring project success. Afolabi, Emeghe, Oyeyipo and Ojelabi (2016) noticed that Nigerian Artisans cut corners and carry out hasty construction in meeting their daily target that makes contractors to depend on migrant craftsmen. Joshua, Olusola, Ogunde, Amusan, Ede, and Tunji-Olayeni (2017) maintained that lack of knowledge on application of cement are responsible for low standard of concrete produced on sites in Lagos State, Nigeria. Construction supervision must be gear towards ensuring high quality standard of work and the processes engaged in carrying them out by the parties involved. Ogundipe *et al.* (2018) reported that supervisor/workmen ratio on sites remained one of the ignored factors responsible for low safety practices. In Nigerian construction industry, supervision has been a major concern that could limit quality performance of construction projects. Construction industry is labour-intensive, which involves human effort and performance. Construction is a key sector of the national economy for the countries all around the world, as traditionally it took up a big portion in nation's total employment and its significant contribution to a nation's revenue as a whole. However, until today construction industries are still facing a number of problems, such as low productivity, poor safety and poor quality of work (Attar, 2013). Supervision is continuous and involves participatory process as against the traditional supervisory visits which concentrate on fault finding instead of solving problem that could hinder quality performance. The periodic site visits offer little guidance to improve productivity where site workers are left undirected, with little or no milestones that could help measure their productivity level before the next supervisory visit. Motivation and

optimizing workers could be hard to come by in such situation. Fagbenle, Ogunde and Owolabi (2011) emphasizes that contractors need to detect the attributes of their operatives in enhancing their service delivery. Jha and Iyer (2006) noticed that competent project managers would engage his past experience to contribute positively to successful delivery of projects. Because other success factors- (support of top management; supervision and report from parties to project; communication within project teams and clients could be harnessed to their advantages is the process of ensuring that the project is built in accordance with the requirements of the contract documents, approved plans, specifications, building codes, building code standards and applicable local codes and ordinances.

Heravitorbati, Coffey, Trigunasyah, and Sagharforoush (2011) described quality and success in construction projects as the fulfilment of expectation of project participants. In Nigeria, it is generally believed that poor construction supervision, corruption, weak building regulation, poor structural design, defective construction, use of low-quality materials, hasty construction, shallow foundation and poor workmanship are the common causes of most building failures. Madu (2005) identified causes of building failure as due to natural occurrences such as earthquakes, tornadoes, flood, etc. According to him others include factors such as omission, carelessness, leading to use of deficient structural drawings, absence of proper supervision of projects, alteration of approved drawings, use of substandard materials, corruption in the Nigerian system, building without approved drawings and translocation of building plans to different sites. This may also be in form of illegal alteration to approved drawings. This practice if not properly controlled could spell danger years after the buildings are in us (Chendo and Obi, 2015).

Structural failure in buildings, in broad terms comes in various forms and degrees of severity; the worst of it is structure collapse. Deterioration or decay especially of vigour or usefulness of a building can be categorized as a failure of some sort but a total loss of bearing strength resulting in a sudden breakdown, physical depletion and/or falling apart is termed a collapse. Among these causal factors are greed, incompetence, corruption, poor planning, poor enforcement of building codes, inadequate public awareness and education, and limited financial and technical resources (Falobi, 2009). In the developing countries, majority of the indigenous construction firms depend mainly on conventional methods of construction (Alwi, Keith, and Sherif, 2001). Thus, demand supervision of operatives and their activities by the supervisors in the various units. They also believed that the construction industry attracts different participants working together to perform one tasks or the other that are interdependent and each of the operatives' inputs are required in meeting clients' satisfaction in all ramification. Hackman, Acheampong, Agyekum and Ayarkwa (2015) identified unfavourable working conditions, commitment of all project participants, and arrangement of site layout, inadequate top management support and indecisiveness of project team as the major factors affecting supervision of projects. This syndrome has caused serious damage to the industry in all manners, thereby resorting into repeated delays and cost overruns. On the other hands, problems that affect operative's service delivery have to do with construction process and materials procurement as established in (Sholanke, Fagbenle, Aderonmu, and Ajagbe, 2015). They further maintained that application of low quality of building materials and poor design contributed to buildings collapse being experienced from time to time in developing nations. Ogunde *et al.* (2017), believed that construction projects could experience low quality of finished job, project elongation, disputes, delay payment and poor project delivery due to shortage of skilled

workers. Ogundipe (2017) argued that lack of safety knowledge of workers during their apprenticeship could negatively impact their skills and response to safety practices on sites. Meanwhile dimension tolerance is another major problem affecting the procurement and performance of building materials, because materials such as blocks, bricks, reinforcement bars, plumbing pipes and prefab concrete vary in lengths, diameters, strength and sizes (Joshua and Ajao, 2018).

Strategies for Improving Project Delivery

Quality supervision is nothing but how well a supervisor utilizes available resources (men and material) effectively and efficiently, all project managers agree that the effectiveness of supervisor's efforts is judged by how well they manage every activity during the construction phase (Shinde *et al.*, 2014). The measure to improve quality supervision in construction project cannot be over emphasizes (Sugiharto, Kieth and Sherit, 2001). He also optioned that it is the supervisor's job to make use of all resources available efficiently. Shinde *et al.* (2014), identified various measure such as training of supervisors, material management, inspection, and stacking and storage for improving site supervision. Khyomesh *et al.* (2011) defined material management as a process that coordinates planning, assessing the requirement, sourcing, purchasing, conveying, storing and monitoring of materials, minimalizing the waste and optimizing the profitability by reducing cost of material.

According to Shinde *et al.* (2014), the purpose of training a supervisor is to improved self-confidence, to improve work efficiency, to develop motivational skills, to develop leadership skills, to improve operational efficiency and encouraging continuous development. Shinde *et al.* (2014), postulated that a supervisor must be familiar with all the activities that are carried out on site, must be able to plan, organize, lead, monitor and motivate and control. They also must have basic technical skills. According Sugiharto *et al.* (2001), a supervisor must understand site drawings, understand quality specifications, attends site meetings, responsible for planning and allocating labour and job/task, read and write report. He is also organizing site storage, controlling and checking each job/task being taken in projects, discussing problems with foremen and labourers. Chika and Chijioke (2013) postulated that quality and effective supervision has to with guiding, advising, encouraging, refreshing, motivating and ascertaining the stated goals of the Organisation. Raji and Firas (2011) opined that quality management and supervision of work means checking and judging construction site work against the required specification and standards, before, during and after completion of the work. Alwi *et al.* (2001) affirmed that success in completing site activities, right from the beginning to the end, relies heavily on the quality of supervision. Naturally, the quality of supervision is dependent upon the supervisor's skill. A supervisor is usually given authority and responsibility for planning and controlling the work of a group by close contact (Alwi *et al.*, 2001). According to Gidado (2016), a supervisor must be willing to deliver high quality building materials to site in required quantities coupled with strict supervision of workmen by the Site Supervisor. Gidado (2016) agreed that adequate supervision leads to quality job but comes with additional cost for the effective supervision called cost of quality. David and Sunday (2015) agreed that in putting in place measure that improve supervision, a good process for recording time within each segment of projects, using Timesheets to record and monitor the time spent by staff on a particular shift; quickly Identify measure and resolve time management issues that relates to the project and keep your Project Plan up-to-date at all times.

Construction site congestion lowers the rate of productivity as identified by (Aduagyei, and Ruwanpura, 2008). According to Beleiu, Crisan, and Nistor (2019), projects are used in all economic and non-economic fields as mean of organizing the activity, aiming the achievement of desired objectives. Davis (2014) studies project management success in literature from 1970s to present, classifying the evolution of success factors into decades. According to this study, approaches of success factors evolved from focusing on the operation level of a project in 1970s to embracing a stakeholder focused approached after 2000s (Davis, 2014). In accordance with her previous discovery, Davis (2014) adopted the following themes in order to describe the success factors of projects. The themes are: cooperation, communication, timing, identifying agreeing objectives, stakeholder satisfaction, acceptance and use of final products, and cost budget.

METHODOLOGY

Survey research design method using quantitative research approach was adopted. Data was collected using well-structured questionnaire and analyzed using descriptive method of analysis. Sekaran and Bougie (2009), defined study population as the general population from whom the expected data to discover answers to your exploration question is acquired. The population for this study comprises construction professionals that involves in the execution of building projects in Federal Capital Development Authority (FCDA) and Efab Properties Limited in Abuja. The population size for the study is 70. The sampling frame for this study is comprised of Quantity Surveyors, Builders, Engineers and Architects. According to Ali *et al.* (2010), a sample size larger than 30 and less than 500 are recommended appropriate for a most research study. Sample size is a representative number or group from the general research population (Sekaran and Bougie, 2009). Since the population size was less than 200, a census of the total members of the population (70) structured questionnaires were administered among construction professionals while 57 were retrieved at 81% returned rate. The questionnaire was designed in a 5-point Likert's scale format. It was broken down into five sections. The first section addressed the profile of the respondents while the other sections addressed the objectives respectively. Data analysis involves making sense out of the numerical values obtained through the data collection process (Morenikeji, 2007). All the data collected for this research were analyzed using descriptive method, which was similar to that used by (Anifowose, Lawal and Umoru, 2014). The use of Mean Item Score (MIS) was adopted to identify and assess the factor of quality supervision, identify and assess the factors of construction project delivery, determine the effect of quality supervision measure on construction project delivery and to examine the strategies for improving project delivery.

DATA ANALYSIS AND DISCUSSION

The profile of respondents was presented in this section. This section also gives the presentation of results of data collected from the analysis carried out. The data collected from the field were analysed using descriptive statistics, Mean Item Score (MIS) and presented in form of Figures and Tables.

Demographic Characteristics of Respondents

This section shows the demographic characteristics of respondents that contributed to the research. Highlight of the respondents' demographics are given in figure 1 – 5.

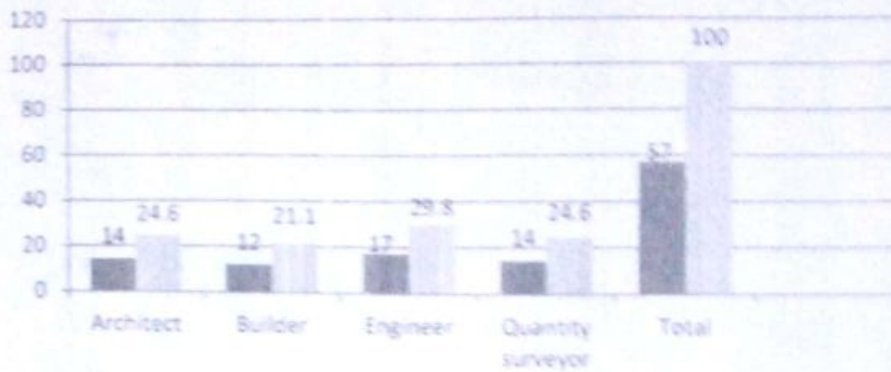


Figure 1: Profession of the Respondents

Figure 1 present the profession of the respondent. The largest contributors to this research were engineers with frequency of 17 having 29.8%, followed by Architects with frequency of 14 having 24.6% and Quantity Surveyors with frequency of 14 having 24.6% respectively, next are Builders with frequency of 12 having 21.1%. This signifies that the key professional's responds to the study more which makes the information obtained more reliable.

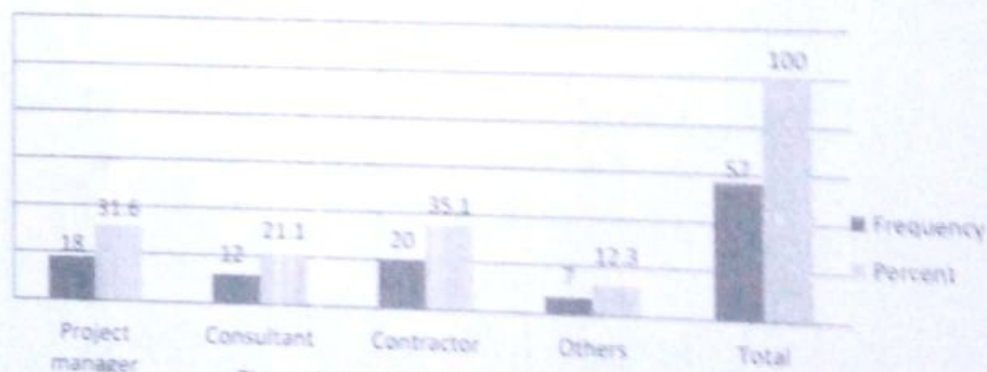


Figure 2: Designation of Respondent

Figure 2 shows the designation of respondent's in the construction industry, in which are project managers, consultant, contractor and others have frequency of 18 with 31.6%, 12 with 21.1%, 20 with 35.1% and 7 with 12.3 percentage contribution respectively. This signifies that more than average of respondents has been involved in building construction project which makes information obtained more reliable.

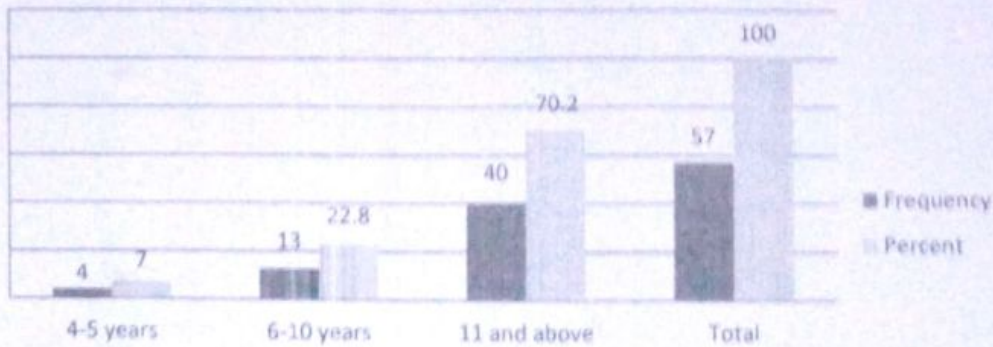


Figure 3: Years of Experience

Figure 3 shows the years of respondent's experience in which, 4 – 5 years, 6 – 10 years and 11 years and above have frequency of 4 with 7.7%, 13 with 22.8% and 40 with 70.2% percentage contribution respectively. This asserts that information obtained from the research is reliable and rich considering respondents experience over the year.

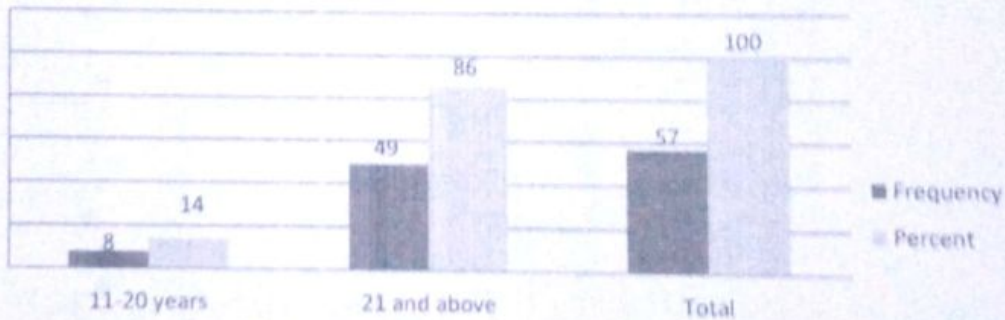


Figure 4: Project Executed In Last Five Years

Figure 4 present the number of projects executed by the respondent over the years in which 11-20 years, and 21 years and above have frequency of 8 with 14%, 49 with 86%, percentage respectively. This asserts that information obtained from the research is reliable and rich considering respondents project executions over the years.

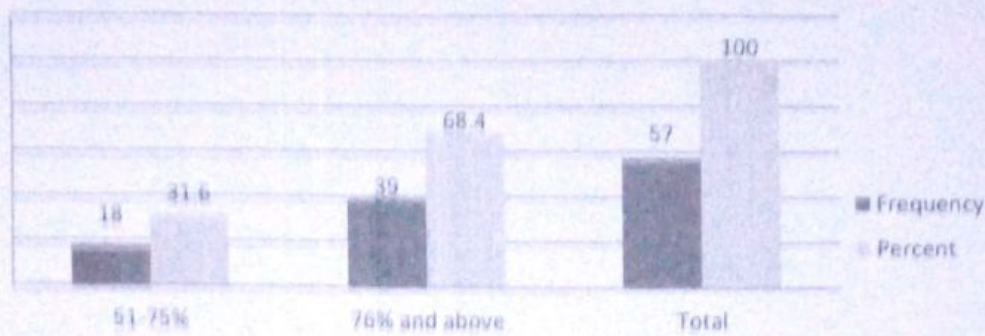


Figure 5: Percentage Of Quality Supervision

Figure 5 shows the percentage of quality supervision of operatives which ranges from 51-75% 76%and above have frequency of 18 with 31.6% and 39with 68.4% percentage contribution respectively. This asserts that information obtained from the research is reliable and rich considering respondents experience over the year.

Factors of Quality Supervision

Nineteen (19) basic factors of quality supervision were identified through literature review and were ranked according to their importance using Mean Item score (MIS). The rate of response and the MIS score are shown in Table 1.

Table 1: Factors of quality supervision

Sr/No.	Factors	MIS	Rank	Decision
1	proper manpower management	4.66	1st	very effective
2	material handling and transport waste management	4.64	2nd	very effective
3	proper design interpretation	4.59	3rd	very effective
4	Checking the trade mark of the construction product	4.57	4th	very effective
5	check the grade of materials	4.57	4th	very effective
6	material estimation, budgeting, planning and programming	4.57	4th	very effective
7	supervise quality assurance	4.57	4th	very effective
8	scheduling purchasing and procurement	4.56	8th	very effective
9	supervise specification alignment	4.49	9th	Effective
10	proper communication among parties involved	4.47	10th	Effective
11	material storage and warehousing	4.43	11th	Effective
12	strict supervision on labour	4.42	12th	Effective
13	education and training of operatives	4.42	12th	Effective
14	inventory control	4.36	14th	Effective
15	check the batching date and transportation date	4.33	15th	Effective
16	carry out price comparison	4.26	16 th	Effective
17	supervise testing of material	4.24	17 th	Effective
18	product and component supervision	4.21	18 th	Effective
19	supervise dimension tolerance	4.17	19 th	Effective
Average		4.45		Effective

Table 1 revealed nineteen (19) basic factors which affect quality supervision with mean important score between 4.66 and 4.17. The result indicates that "proper manpower management" was

ranked first (1st) having the most effective on factors that affect quality supervision an MIS score of 4.66, followed by "material handling and transport waste management" was ranked second (2nd) with MIS score 4.64, next was "proper design interpretation" which was ranked third (3rd) with an MIS score of 4.59, "checking the trade mark of the construction product", "material estimating, budgeting, planning and programming," "check the grade of materials" and "supervise quality assurance" were all ranked fourth (4th) with an MIS score of 4.57, the order was followed by "scheduling, purchasing and procurement" was ranked eighth (8th) with an MIS score of 4.56, while the least on the table of ranking was "supervise dimension tolerance" with an MIS score of 4.17.

Factors Influencing the Rate of Project Delivery

The Factors that influences the rate of project delivery was assessed with a likers scale of 1-5; mean item score (MIS) was used to analyze the data collected. The rate of response and the MIS score as they are categorized into five (5) related factors as shown in Table 2.

Table 2: Factors influencing the rate of project delivery

S/No.	Factors	MIS	Rank	Decision
1	design development	4.80	1st	very effective
2	material procurement	4.59	2nd	very effective
3	lack of qualified craftsmen	4.57	3rd	very effective
4	defective work or construction mistakes	4.47	4th	Effective
5	financial process difficulty or money disbursement	4.43	5th	Effective
6	excessive changes in quantities and changes in specification, drawings approval	4.40	6th	Effective
7	inadequate work scheduling	4.40	6th	Effective
8	incomplete document	4.36	8th	Effective
9	failure or damage to structure	4.36	8th	Effective
10	design error or incomplete supply of drawings	4.35	10th	Effective
11	inspections from local authority, consultants or clients	4.35	10th	Effective
12	different site condition	4.35	10th	Effective
13	equipment non availability	4.35	10th	Effective
14	inadequate planning	4.35	10th	Effective
15	sub surface soil condition	4.31	15th	Effective
16	labour injuries during construction process	4.29	16th	Effective
17	material/ fabrication delay	4.29	16th	Effective
18	decision during development stage or changes in drawing	4.28	18th	Effective
19	poor subcontractor performance	4.26	19th	Effective
20	poor supervision of material and labour	4.26	19th	Effective
<i>Average</i>		4.39		Effective

As illustrated in Table 2, the result indicates that in terms of factors that influence the rate of project delivery, the "Design development" was ranked first (1st) as the major factor that influence the rate of project delivery with an MIS score of 4.80. "Material procurement" came second (2nd) with an MIS score of 4.59 followed by "Lack of qualify craftsmen" which was ranked third (3rd) with an MIS score of 4.57, while "Poor subcontractor performance" and "poor supervision of material and labour" were the least on the list of ranking with an MIS of 4.26.

The Strategies for Improving Project Delivery

The strategies for improving project delivery was assessed with a likers scale of 1-5; mean item score (MIS) was used to analyse the data collected. The rate of response and the MIS score as they are categorized into five (5) related factors as shown in Table 3.

Table 3: Strategies for Improving Project Delivery

S/No.	Factors	MIS	Rank	Decision
1	improved Organisation	4.82	1 st	very effective
2	coordinated planning of job	4.66	2 nd	very effective
3	workers motivation like financial incentive and holiday	4.50	3 rd	Effective
4	reducing the amount of deflective work	4.50	3 rd	Effective
5	paying attention to details of the current best practices in the industry	4.49	5 th	Effective
6	timely provision of materials	4.45	6 th	Effective
7	reducing the construction process risk	4.38	7 th	Effective
8	the effective application of workers skill and experience	4.35	8 th	Effective
9	improving the service to client	4.26	9 th	Effective
10	external influences such as political or cultural awareness and capability	4.21	10 th	Effective
<i>Average</i>		<i>4.46</i>		<i>Effective</i>

Table 3 revealed ten (10) basic strategies for improving project delivery with mean important score between 4.82 and 4.21. The result indicates that “Improved Organisation” was ranked first (1st) having a very effective on the strategies of improving project delivery with an MIS score of 4.82, followed by “coordinated planning of job ”was ranked second (2nd) with MIS score 4.66 , next was “workers motivation like financial incentive and holiday” and “reducing the amount of deflective work” were both ranked third (3rd) with an MIS score of 4.50, while “external influences such as political and cultural awareness and capacity” was the least on list of ranking with an MIS of 4.20.

DISCUSSION OF RESULTS

The first objective of this study was to identify and assess the factor of quality supervision. Nineteen factors were identified and data was collected under this objective based on material procurement supervision, material supervision and worker supervision. “Poor manpower management” was ranked first, making it the most effective factor of quality supervision. Having an MIS of 4.66 and “supervise dimension tolerance” was ranked last with an MIS of 4.45. This finding is in line with Ogundipe *et al.* (2018) who identify poor manpower management as a factor influencing quality supervision and Nnadi (2018) who postulated Promotion of quackery of is of the causes of building collapse. The second objective was to identify and assess factors of construction project delivery. The analysis reveals that “Design Development” is the most important factor influencing project delivery having an MIS of 4.80. While poor subcontractor performance and poor supervision of labour and material were ranked least with an MIS of 4.26 this finding corresponds with Idowu *et al.* (2016) who identified design development as a factor that causes delay in project delivery. The third of objective was to provide strategies of improving project delivery. Ten (10) strategies were identified. The most effective strategy improving project delivery was “Improved Organisation” with an MIS of 4.82 and the last was “external influences

such as political and cultural awareness and capacity” with an MIS of 4.20. This finding is in line with the findings of Davis (2014), that communication and improved Organisation among stakeholder of construction industry improves project delivery.

Summary of Findings

The analyses carried out in this study revealed the following:

- i. The most effective factor of quality supervision is manpower management (MIS=4.66) and Dimension tolerance was ineffective with an (MIS=4.45)
- ii. Design development is the most influencing factors of project delivery
- iii. The most effective strategy for improving project delivery is an improved organisation while external influences such as political and cultural awareness and capacity (MIS=4.20)

CONCLUSION

This research was carried out to understand the effect of quality supervision of construction operatives on project delivery in Abuja. In order to do so, the study examines the effect of quality supervision factors of construction operatives on construction project with the view to improved project delivery. To achieve this aim, data was collected from various construction firm in Abuja through a well-structured questionnaire. Retrieved data was analyzed through the use of descriptive statistics. The finding from the data analysis carried out led to the following conclusions.

- i. The most important factors of quality supervision are poor manpower management, material handling and transport waste management and proper design interpretation
- ii. The design development is the most important factors that influences the rate of project delivery.
- iii. The most important strategy is improved Organisation.

Recommendations

The finding of this study led to the following recommendations:

- i. Construction industry should focus on the training and improvement of its operatives, since poor manpower management is identified as the effective factor of quality supervision.
- ii. More time and skill should be dedicated to design development in order to produces quality working drawings (architectural design, structural design, electrical and mechanical design) and specification.
- iii. More strategies for improving project delivery should be identified and assess

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