



INFLUENCE OF SUPERVISION ON LABOUR PRODUCTIVITY ON CONSTRUCTION SITES IN ABUJA-NIGERIA

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ABSTRACT

Research efforts have been directed toward the improvement of construction labour productivity over the years, and as a result of its significance to the national economies, the concept continues to receive attention across the globe. This study thus examines the influence of supervision on the productivity of construction workers in Abuja. The research employed mixed methods approach using unobtrusive observation as well as on-site measurement of works to obtain qualitative data on twenty construction sites and questionnaires were used to elicit quantitative data from the professionals and those with supervisory roles involved or engaged by small and medium sized firms. Of the 157 questionnaires that were self-administered to the site supervisors, 124 valid responses were obtained which gave approximately 79% response rate.



Finding from the observation and measurement revealed that there is statistically significant difference between the productivity of workers with professional supervision and those with non-professional supervision (foremen). Results of the findings from the questionnaires on factors militating against effective supervision on construction sites showed that communication breakdown was ranked first with mean of 4.29 while irregular meeting was the least ranked with mean of 3.59. It was suggested that adequate attention has to be paid to training, retraining and continuous professional development of people charged with supervisory roles on the construction sites so as to achieve higher construction workers productivity.

Keywords: Supervision; Labour productivity; Construction; Professional; Non-Professional; Nigeria

1. INTRODUCTION

Construction industry occupies a vital position in the economy of any country because of its important contribution to the process of development (OYEWABI *et al.*, 2011). In Nigeria, construction industry is of paramount importance for employment and economic growth (OGUNSAMI; JABGORO, 2006).

Therefore, 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 *et al.*, 2013).

Regardless of the significance of the productivity concept, productivity improvement in construction has been disregarded for many years (HAMMAD *et al.*, 2011). Bernstein (2003) asserted that the very nature of construction industry makes the productivity concept a boggling one, because of a few variables, for example, firm size, low overall revenues, industry fracture, natural issues, and constraints on the supply of skilled labour.

Construction firms may pick up point of preference over their rivals by enhancing productivity to build projects at lower costs yet; most contractors do not properly address this key issue or assess its effect on the project's benefit (HAMMAD *et al.*, 2011). However, low productivity of construction workers is one of

the causes of cost and time over run which affect construction project (ATTAR *et al.*, 2013).

A study conducted by Alwi *et al.* (2001) revealed that construction projects are labour intensive, it is believed that some construction firms engage unqualified and unskilled labour, as a result extra coordination and supervision need to be given. In other words, the success in completing site activities on time, within cost and quality relies on the quality of supervision.

According to Chika and Chijioke (2013), some supervisors are not qualified to supervise and those that are qualified and experienced to supervise find the supervisees difficult to supervise because of their attitudes. These make the supervisors to often be driven to a state of defeat and despair leading to the failure of construction works.

Agwu (2014) concluded that poor supervision of construction project is a threat which affects lives and properties. Site supervision may affect the general execution and productivity of construction projects (ALWI *et al.*, 2001). Frimpong *et al.* (2011) asserted that inadequate supervision practices can lead to improper planning and poor management of tools, equipment, materials, and labour which affect the productivity. Therefore, low productivity and poor supervision are the problems which this study is geared towards addressing.

It is on the basis of this that the study seeks to address the following research questions:

1. What is the relationship between supervision and workers' productivity on construction site?
2. What are the factors militating against effective supervision on the construction site?

Productivity being a major concern to production and operation managers, higher productivity can be achieved through better utilization of available resources. Effective supervision of construction workers is one of the processes through which high productivity can be achieved (ALUMBUGU *et al.*, 2014). A study carried out by Alinaitive *et al.* (2007) ranked incompetent supervision and lack of skilled workers as the two most significant causes of low productivity of construction work in developing countries.



Similarly, Odusami and Unoma (2011) noted that the problems of low productivity can be directly linked to poor and inadequate training of construction skilled workers. In a related development Fagbenle *et al.* (2012) concluded that training should be accorded a priority attention by the managements of construction firms in order to attain greater workers' productivity on construction sites.

2. THE NEED FOR SUPERVISION ON CONSTRUCTION SITES

Supervision is considered as a means to enhance staff development, and helps to equip the workers with the professional knowledge and skills necessary to do their job effectively, also gives workers the opportunity to communicate, coordinate, and cooperate with one another as a team (MING-SUM, 2005). Aqua Group (2002) stressed that supervisory works have become more complex and demanding, it requires professional and interpersonal skills. However supervision is needed in construction projects based on the following reasons;

1. To ensure that specified standard are maintained
2. To ensure that works are completed on time and schedule
3. To ensure that operators put honesty in their work
4. To compile a final report on the construction activities
5. To determine whether the contractor meets the requirements for performing construction activities, regulated by the law
6. To immediately inform the appropriate authority with all the disadvantages or irregularities perceived during construction work and the measure to be taken

A large site may have up to two or three supervisors with supporting trades foreman. However, a medium size site may not have more than one supervisor while a small site may not need the service of a supervisor but in its place, the trades' foreman will step in (CORBON, 2011). As indicated by Che Hassan *et al.* (2007) a large building construction projects included several offices and commercial buildings whereas a small building construction projects consisted mainly of residential buildings and housings.

3. LABOUR PRODUCTIVITY

Productivity is one of the key components of every company's success and competitiveness in the market. A construction contractor stands to pick up or lose, contingent upon how well company's productivity reacts to competitors. Construction firms may pick up favourable position over their rivals by enhancing productivity to build project at lower expenses; yet, most contractors do not properly address this vital issue or assess its effect on the project benefit (HAMMAD et al., 2011).

Construction industry is labour-intensive, which involves human effort and performance. There are various problems that faced construction industry but the most challenging is labour productivity in construction (SOHAM; RAJIV, 2013). Attar et al. (2003) revealed that project managers were faced with critical issues which affect labour construction productivity. Similarly, Soham and Rajiv (2013) added that some construction project have some difficulties in terms of materials, money, tools and local contractor's construction cost. Looking at the current scenario of continuous downfall of construction labour productivity, it is necessary to identify these factors.

A study conducted by Makulsawatudom et al. (2004) established 10 most significant factors affecting construction productivity in Thailand and they include lack of materials, incomplete drawings, incompetent supervisors, lack of tools and equipment, absenteeism, poor communication, instruction time, poor site layout, inspection delay and rework.

Earlier, Thomas (1991) stated that the factors undermining the productivity of construction workers are: construction type, scope, layout and complexity, construction methods, weather, skill of the work force, work practice, length of work day, availability of materials, incentives, degree of supervision, enabling environment, government regulations and organization size.

Attar et al. (2003) revealed that understanding critical factors affecting construction labour productivity (positively and negatively) can be used to prepare a strategy to reduce inefficiencies and to improve the effectiveness of project performance. These factors have been identified and are grouped into 15 categories according to their characteristics, namely: design factors, execution plan factors, material factors, equipment factors, labour factors, health and safety factors,



supervision factors, working time factors, project factors, quality factors, financial factors, leadership and coordination factors, organization factors, owner/consultant factors and external factors.

A study carried out by Alinaitive et al. (2007) rated poor supervision and lack of skills workers as the two most important causes of low productivity of construction workers in developing countries. Ameh and Osegbo (2011) noted that low salary, absence of materials and unpleasant working condition are having key effect on productivity of labour involved in concrete casting in single story building projects in Nigeria.

Thus, Odusami and Unoma (2011) added that the problems of low productivity can be directly linked to poor and inadequate training of construction skilled workers. Moselhi (2010) concluded that the number of factors that influence labour productivity on daily basis include; temperature, relative humidity, wind speed, precipitation, gang size, crew composition, height of work, type of work and construction method employed.

3.1. Impact of supervision on workers' productivity

Construction productivity mostly depends on the performance of construction workers (JERGEAS, 2009). In practice, most supervisory visits may be focused on inspection and fault-finding rather than providing workers the opportunity to improve their performance and solve problems during service delivery.

This 'traditional' form of supervision may be detrimental to workers motivation. Instead, supervisors should encourage discussion of problems, provide immediate feedback and establish goals to assist workers in maximizing performance (FRIMPONG et al., 2011). Willis-Shattuck et al. (2008) opined that the impact of supervision on construction labours' outputs is felt particularly through improvements in motivation and job satisfaction.

The labour force plays a very important role in the construction practice. Therefore, improvement in construction productivity needs to be achieved through greater resource allocation, human resource efficiency and supervision increased innovation and technology diffusion (JERGEAS, 2009).

However, construction labour productivity improves as construction supervision is provided. The additional supervision has the effect of reducing the



construction gang sizes and is usually associated with defined construction packages to be executed (MERROW et al., 2009). Frimpong et al. (2011) stressed that supervision increases workers empowerment, time management, fewer complaints and more positive feedback.

Supervisors encourage workers to adopt good practices in order to achieve a high level of performance. Such 'supportive' supervision is significant and more beneficial to productivity of construction workers. The benefits of supervision on construction workers using limited resources remain uncertain, even though the quality of supervision may be a key determinant of its impact on productivity (MERROW et al., 2009).

Fischer (2009) concluded that the impact of management styles and techniques on workers' productivity is significant. It is through exercising power that leaders (supervisors) are able to influence others, this power can lead to one of the following reactions: commitment, compliance or resistance which affects productivity.

3.2. Supervision and productivity improvement

One way that construction supervisors can improve productivity is by determining how to influence worker's attitude, how smooth the work will flow and how much work can be accomplished (ABD-EL-HAMIED, 2014). A good leadership and supervision in construction projects increased the productivity through decreasing production costs, reducing time required for the operation, improving profit, improving the quality of product and increasing the utilization of resources.

Abd-El-Hamied (2014) stated that the cycle for productivity improvement involves four phases: productivity measurement, productivity evaluation, productivity planning and productivity improvement. Supervisors may influence productivity through their decisions after their study and observation for the productivity measurement and evaluation. Fischer (2009) implied that effective delegation of responsibilities and management of required number of workers by the supervisors will give better performance and increase in productivity.

4. RESEARCH METHODOLOGY

This study employed mixed methods approach in examining the influence of supervision on the productivity of construction workers in Abuja, Nigeria. The qualitative aspect of the study was conducted using on-site unobtrusive observations



and measurements of activities of workers on twenty construction sites. This was used to provide answer to the research question that seeks to establish the relationship between supervision and workers' productivity on construction sites.

This approach has been validated in research (e.g. OKOLIE, 2009) as it allows a researcher to have a direct contact with real life situations and also watch the behaviours that occur naturally. The approach assisted the authors in watching, recording and analysing events of interest on the construction sites (BLAXTER; HUGHES; TIGHT, 2006). The observation was conducted among the staff of small and medium sized construction firm with staff strength between 10 to 199 employees (SMEDAN, 2007).

In order to provide a good basis for the study, site supervisors and workers working on an on-going twenty construction projects were observed; 10 (ten) construction sites with professional supervisors were identified for observations while another construction sites were observed with non-professional supervision (foremen).

To ensure homogeneity of data, the study considered duplex structure of four and five residential buildings with Gross Floor Area GFA ranging from 200m² to 470m² for observations. Within the context of this study, a professional supervisor is the one who had the requisite tertiary education or training in construction related courses such as Architecture, Building, Quantity Surveying, or Civil Engineering and certified as corporate member of their respective professional bodies with at least 5 years of working experience in the construction industry.

While non-professional supervisor referred to trades foremen who had passed all the required trade tests 1, 2, 3 with reasonable length of experience in their trades before being appointed as trade foremen in their organizations. This category of supervisors are leaders of their respective trades such as masonry, carpentry and joinery, steel bending, painting and interior decorations, plumbing and electrical works (CORBON; NIOB, 2010).

The construction activities that were observed included foundation excavation, block laying, casting of concrete columns and beams which were achieved 100% for the entire sites under consideration (i.e. 10 sites with professional supervision and 10 sites without professional supervision). Other activities observed included



plastering work which was achieved 50% and painting work which was at 30% completion.

The study employed a modified checklist from Corbon (2011) to determine the degree of adherence in terms of quality of the activities observed. However, only observation on the casting of concrete columns and beams is reported here.

The quantitative aspect of the research that was employed to identify the factors militating against effective supervision on construction sites, involved the use of structured questionnaire in surveying the opinion of the professionals involved in the supervision of construction workers.

A total of 157 self-administered questionnaires were administered to construction professionals in small and medium sized construction firms, and this included the consultants, contractors, project managers / supervisors, and trades foremen; 124 valid responses were obtained representing approximately 79% response rate. Paired samples T-test at 95% confidence interval was employed in analysing the results obtained from the observations and measurements, while mean and percentages were used in analysing the questionnaire survey that formed the basis for the conclusion reached and the recommendations made.

5. RESULTS AND DISCUSSION

Table 1 shows the result of adherence level to quality for casting of column and beam for the ten sites considered with professional supervision. It shows that 4.4 was the mean-observed for material required for the work; 4.5 for the cutting of reinforcement and bending to required dimension; 3.1 for the painting of formwork with used oil before placement; and 4.3 for the uniform concrete mixture respectively.

Table 1: Column & beam observation with professional supervision

Sn	Variables	Site I	II	III	IV	V	VI	VII	VIII	IX	X	Means	Rankin
1	Are the materials required for this section of work ready on site and pure?	4	4	5	3	5	5	5	4	4	5	4.4	3rd
2	Has reinforcement been cut and bend to required dimension?	5	5	4	4	4	4	5	4	5	5	4.5	2nd
3	Are the reinforcement in alignment?	4	5	5	4	5	5	4	5	4	5	4.6	1st
4	Has the concrete kickers aligned	1	1	4	1	4	1	1	4	1	4	2.2	11th



	longitudinally using exact dimension of column section area?													
5	Were the reinforcement positions with appropriate lapping?	4	4	5	4	4	4	5	3	4	5	4.2	5 th	
6	Are the concrete kickers aligned longitudinally and cross sectionally?	1	1	4	1	4	1	1	4	1	4	2.2	11 th	
7	Form work for column and beam are they accurately form?	5	3	4	3	4	2	4	3	3	3	3.4	9 th	
8	Before placement is the form work painted with use of oil?	4	4	1	3	5	1	3	1	4	5	3.1	10 th	
9	Are the concrete spacer used for column & beam?	3	4	4	5	3	2	5	4	4	4	3.8	8 th	
10	Are the form work appropriately place, braced and check for alignment?	3	4	4	4	5	5	5	3	4	5	4.2	5 th	
11	Is mixture of concrete uniform?	4	5	5	5	4	4	5	4	3	4	4.3	4 th	
12	Is vibrator available on site for compaction?	4	4	4	5	3	5	4	4	3	4	4.0	7 th	
13	Is concrete testing gun available for test?	1	1	1	1	1	1	1	1	1	1	1.0	13 th	

Rating scale used: High adherence = 5, Adhere = 4, moderately adhere = 3, slightly adhere = 2, No adherence = 1

Table 2 shows the result of adherence level to quality for casting of column and beam for the ten sites considered without professional supervision. It revealed that 4.0 was the mean-observed for material required for the work; 4.1 for the cutting of reinforcement and bending to required dimension; 2.4 for the painting of formwork with used oil before placement; and 3.8 for the uniform concrete mixture.

Table 2: Column & Beam Observation without Professional Supervision (foremen)

Sn	Variables	Site I	=	II	III	IV	V	VI	VII	VIII	IX	X	Means	Rankin
1	Are the materials required for this section of work ready on site and pure?	4	4	5	5	5	4	3	3	4	3	4.0	3rd	
2	Has reinforcement been cut and bend to required dimension?	4	4	4	5	3	5	4	4	3	5	4.1	2nd	
3	Are the reinforcement in alignment?	4	4	5	4	4	5	4	5	4	3	4.2	1 st	
4	Has the concrete kickers aligned longitudinally using exact dimension of column section area?	1	1	1	4	1	4	1	1	1	4	1.9	11 th	
5	Were the reinforcement position with appropriate lapping?	4	3	5	4	4	5	3	4	4	3	3.9	4 th	
6	Are the concrete kickers aligned longitudinally and cross sectionally?	1	1	1	4	1	4	1	1	1	4	1.9	11 th	



7	Form work for column and beam are they accurately form?	2	3	3	3	4	4	3	3	5	2	3.2	7 th
8	Before placement is the form work painted with use of oil?	3	3	1	5	4	1	1	4	1	1	2.4	10 th
9	Are the concrete spacer used for column & beam?	3	4	3	1	1	5	3	4	3	1	2.8	8 th
10	Are the form work appropriately place, braced and check for alignment?	4	4	3	3	4	4	5	5	3	3	3.8	5 th
11	Is mixture of concrete uniform?	3	4	5	4	3	5	3	4	3	4	3.8	5 th
12	Is vibrator available on site for compaction?	3	4	1	1	4	4	4	3	1	1	2.6	9 th
13	Is concrete testing gun available for test?	1	1	1	1	1	1	1	1	1	1	1.0	13 th

Rating scale used: High adherence = 5, Adhere = 4, Moderate adherence = 3, Slight adherence = 2, No adherence = 1

The result of the casting of column and beam with respect to adherence to quality in Tables 1 and 2 (with professional and without professional supervision) when compared across the sites revealed the following means: 4.4, and 4.0 for the material required for the work; 4.5, and 4.1 for the cutting of reinforcement and bending to required dimension; 3.1 and 2.4 for the painting of formwork with used oil before placement; and 4.3 and 3.8 for the uniform concrete mixture.

Table 3 shows the result of t-test analysis performed to compare difference of adherence level to quality between castings of column and beam with professional supervision and without professional supervision (foremen). It was apparent from the analysis that the value of t-calculated (4.790) was greater than the value of t-tabulated (2.18); and the probability value (0.000) was lower than 0.05 (5%) level of significance and within 95% confidence level. The evidence is statistically significant. The null hypothesis was hereby rejected and the alternative hypothesis was accepted. The result implies that there is a statistically significant difference between the sites supervised by professionals and non-professionals.

Table 3: Test of difference between adherence level to quality of casting column and beam with professional supervision and without professional supervision

S/n	Variables X1	X2	Type of analysis	Observation T-cal	T-tab	P value	Inference Remark	Action on H
1	Professional Supervision	non Professional Supervision	T-test	4.790	2.18	0.000	statistically Significant	Accept H _i and reject H _o

The significantly higher level of quality of work achieved in sites I to X could be attributed to the professional supervision impacted on workers on these sites (sites I to X). The supervision was assumed to guide, control and directs the



workers. The result corroborated Chika and Chijioko (2013)'s finding that supervision deals with guiding, advising, encouraging, refreshing, motivating and ascertaining the stated goals of the organization. It also lends credence to Raji and Firas (2011) which opined that quality management of works means checking and judging site works against the required specifications; before, during and after the completion of the works.

One hundred and fifty seven (157) questionnaires were administered to Consultants, Contractors, Project Managers/Supervisors and Foremen in construction sites in Abuja, one hundred and twenty four (124) were retrieved which represents approximately 78.98% of the questionnaires administered.

Table 4: Distribution of Questionnaires Administered and Returned

Questionnaires	Frequency	Percentage (%)
Questionnaires Administered	157	100.0
Questionnaires Retrieved	124	78.98

The distribution of respondents by gender is shown in Figure 1. Majority of the respondents representing 70.05% are male and 29.95% are female. This could be attributed to the fact that the construction industry is a physically demanding trade which is dominated by males.

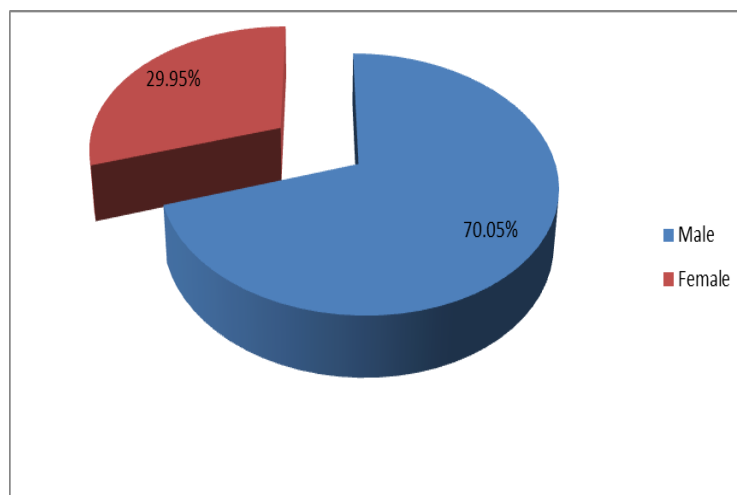


Figure 1: Distribution of Respondents by Gender

Findings reveal that majority of the respondents are Quantity Surveyors representing 38.07%, 23.86% are Architects, 16.75% are Builders, 10.15% are Civil Engineers and other profession represents 11.17%.

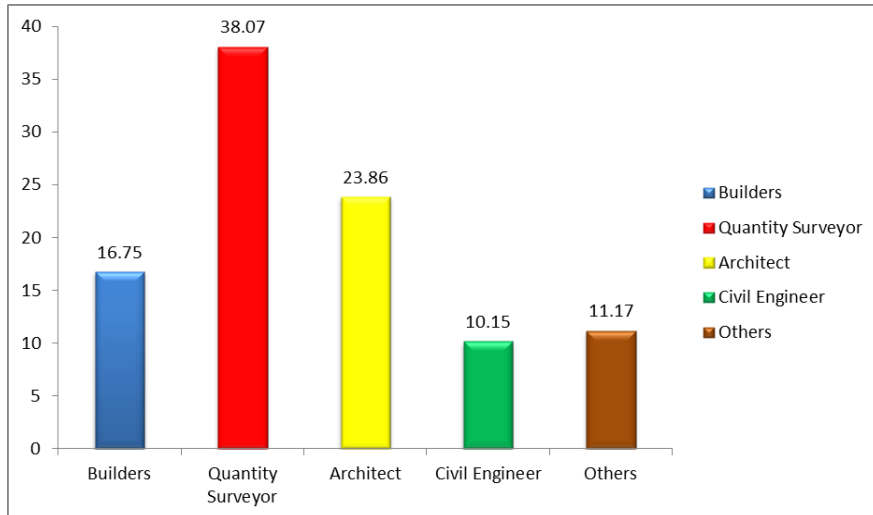


Figure 2: Profession of the Respondents

The years of experience of the respondents is shown in Figure 3. 17.26% of the respondents have less than 5 years of experience, 44.67% have 5-10 years of experience, 35.53% have 11-20 years of experience, 2.54% with 21-30 years of experience and none of the respondents have more than 30 years of experience.

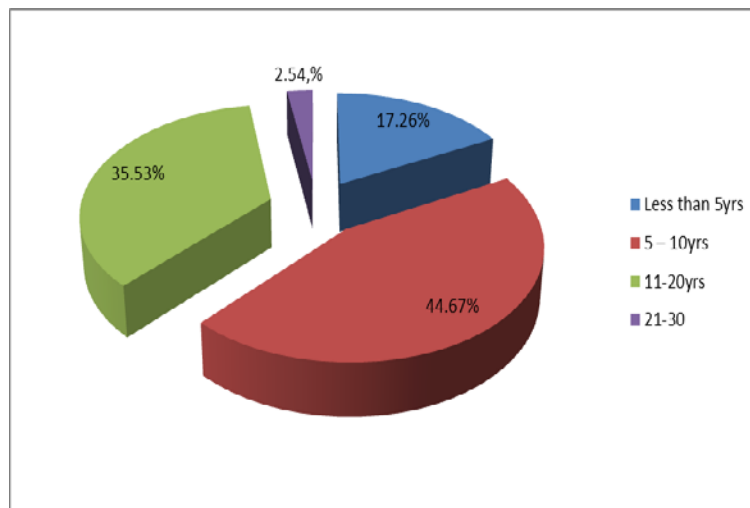


Figure 3: Experience of Respondents in the Construction Industry

The educational qualifications of the respondents reveal that 49.24% have BSc/BTech qualification, 36.55% have HND qualification, 10.15% are MSc/MTech degree holders and 4.06% are holders of ND certificates (see Figure 4).

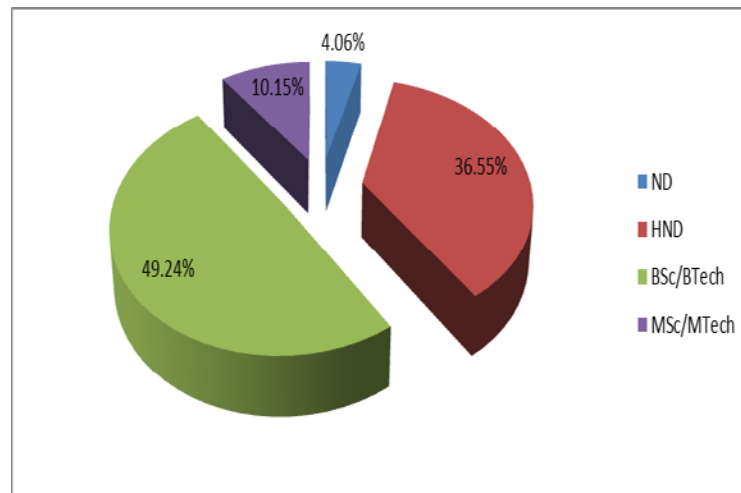


Figure 4: Academic Qualification of Respondents

The factors that militate against effective supervision on construction sites as shown in Table 5 were analysed and ranked. Among consultants, the top five factors that militate against effective supervision are Experienced and committed supervisor, Communication breakdown, inadequate documentation of records and Change of instruction which ranked 1st, 2nd, 3rd, 4th and 5th respectively.

For contractors, Determination of labour ability, Communication breakdown, inadequate documentation of records, Experienced and committed supervisor, lack of motivation and unclear instruction/Inspection delay and absenteeism ranked 1st, 2nd, 3rd, 4th and 6th respectively.

Among Project Managers/Supervisors, Communication breakdown, Experienced and committed supervisor, inadequate documentation of records, lack of motivation and unclear instruction ranked 1st, 2nd, 3rd, 4th, and 5th respectively. While among Foremen, Communication breakdown, Experienced and committed supervisor, Change of instruction, inadequate documentation of records and lack of motivation ranked 1st, 2nd, 3rd, 4th, and 5th respectively.

The overall mean score and further ranking of the factors that militate against effective supervision according to all the categories of respondents on construction sites reveal the top five factors which implies the most influential of the factors as communication breakdown, Experienced and committed supervisor, inadequate documentation of records, lack of motivation and unclear instruction ranked 1st, 2nd, 3rd, 4th, and 5th respectively.

Whereas, the bottom five which also implies the factors with the least influence on effective supervision on construction sites are; Misuse of construction schedule/Inadequate information, Undefined construction package to be executed, Labour disloyalty, Determination of labour ability, Irregular meeting which ranked 14th, 16th, 17th, 18th and 19th respectively.

The result is in line with Fisk (2000) findings that stated that some factors must be considered by construction manager in order to achieve project objectives. Some of these factors include the following: Conduct productivity/ performance study at the activity/ operational level to create benchmark, always adopt simple and efficient communication among labourers as well as with linked parties.

It also lends credence to Chika and Chijioke (2013) which opined that the main objective of supervision is to help the workers to realize their full potential in their respective careers and has a lot to do with communication and leadership.

Table 5: Factors Militating Against Effective Supervision on Construction Sites

Variables	Consultant		Contractor		Project Manager/Supervisor		Foreman		Overall	
	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
Communication breakdown	4.23	2 nd	4.32	2 nd	4.26	1 st	4.29	1 st	4.29	1 st
Experienced and committed supervisor	4.26	1 st	4.12	4 th	4.22	2 nd	4.23	2 nd	4.22	2 nd
Inadequate documentation of records	4.19	3 rd	4.16	3 rd	4.17	3 rd	4.12	4 th	4.16	3 rd
Change of instruction	4.02	5 th	4.06	8 th	4.07	6 th	4.13	3 rd	4.07	6 th
Unclear instruction	4.02	5 th	4.07	6 th	4.09	5 th	4.07	6 th	4.08	5 th
Misuse of construction schedule	3.88	15 th	3.91	15 th	3.93	15 th	3.94	12 th	3.91	14 th
Labour disloyalty	3.84	16 th	3.83	18 th	3.83	17 th	3.87	16 th	3.84	17 th
Lack of motivation	4.12	4 th	4.12	4 th	4.11	4 th	4.10	5 th	4.11	4 th
Improper management of tools, equipment, and minerals	3.91	12 th	3.93	11 th	3.96	9 th	3.97	10 th	3.92	12 th
Delegation of responsibilities and management of required number of workers	3.91	12 th	3.93	11 th	3.96	9 th	3.97	10 th	3.92	12 th
Inspection delay and absenteeism	3.98	8 th	4.07	6 th	4.02	7 th	4.00	7 th	4.04	7 th
Determination of labour ability	3.79	18 th	4.74	1 st	3.76	18 th	3.81	18 th	3.76	18 th
Inadequate information	3.91	12 th	3.90	16 th	3.94	12 th	3.90	15 th	3.91	14 th
Force majeure and Inclement weather	3.93	10 th	3.99	10 th	3.96	9 th	4.00	7 th	3.95	9 th
Irregular meeting	3.58	19 th	3.59	19 th	3.61	19 th	3.55	19 th	3.59	19 th
Undefined construction package to be executed	3.84	16 th	3.90	16 th	3.85	16 th	3.87	16 th	3.87	16 th
Lack of training	4.00	7 th	4.03	9 th	4.00	8 th	4.00	7 th	4.01	8 th



Frequent changes of labour	3.93	10 th	3.93	11 th	3.94	12 th	3.94	12 th	3.93	11 th
Inadequate estimation	3.95	9 th	3.93	11 th	3.94	12 th	3.94	12 th	3.94	10 th

6. CONCLUSIONS AND RECOMMENDATIONS

Based on the findings from the study, it was concluded that there is statistically significant difference between productivity with professional supervision and without professional supervision (foremen) since small and medium construction sites were considered and experienced foremen were involved.

The study also concluded that, the most influential factors militating against effective supervision on construction sites are communication breakdown, inexperienced and uncommitted supervisor, inadequate documentation of records, lack of motivation and unclear instruction were ranked highest. While the least influence factors were misuse of construction schedule/Inadequate information, undefined construction package to be executed, labour disloyalty, determination of labour ability, irregular meeting.

Against this background, it was recommended that there is need to avoid poor supervision of construction work always to reduce communication breakdown; inexperienced and uncommitted supervisor; inadequate documentation of records; lack of motivation and unclear instruction that affect productivity. Also adequate attention has to be paid to training, and continuous professional development of people charged with supervisory roles on the construction sites so as to achieve higher construction workers productivity especially the foremen so that quackery may not continue to plague the Nigerian construction industry.

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