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SUPERVISORY FUNCTIONS OF CONSTRUCTION PROFESSIONALS AND THEIR INFLUENCING FACTORS: PROJECT MANAGERS' PERSPECTIVE IN UYO, NIGERIA

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ABSTRACT

Purpose: The study provided insight into the required supervisory competencies of selected professionals and factors influencing quality of supervision, with a view to enhancing productivity and construction projects delivery in Uyo, Nigeria.
Design/methodology/approach: Evaluations were carried out on the extent of application of professional supervisory functions, and factors affecting the quality of supervision. Exploratory and deductive cross-sectional survey research design was employed and data obtained from 74 copies of structured mail questionnaire received from project managers. Data were analysed using descriptive, relative importance index, and Kruskal-Wallis tests.
Findings: It was found that supervisory functions and factors influencing their quality vary significantly among selected professionals. It is concluded that the competencies of project managers and the factors influencing their quality of supervision depend on the primary professional affiliation of a project manager. It was also concluded that if the primary professional affiliation is not considered before assigning supervisory function, projects may suffer up to 40% pitfall in terms of performance.
Research limitations/implications: This study is limited to the eighteen supervisory functions and twenty two influencing factors selected from literature and the views 74 project managers who returned their questionnaire. The contribution to knowledge is that this study established the vital supervisory competencies and their pitfalls.
Practical implications: It is recommended that developers should adequately assess the competence of a supervisor arising from the primary professional training before assigning supervisory functions. The provisions of the National building Code should be enforced, so that professionals can carry out roles in their area of competence to avoid professional incursion, while ensuring collaboration and eschewing corrupt practices.
Originality/value: The study established the vital supervisory competencies of project managers and the factors affecting quality supervision in Uyo metropolis.

Keywords: Construction professionals; factors; project manager; supervisory functions; Uyo

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1. INTRODUCTION

From the beginning of creation, shelter has remained one of the basic necessities of life; hence the construction industry responsible for its production has always been given important recognition both in developed and developing nations. The industry in Nigeria impacts nearly every facet of the economy and is responsible for about 16.0% of Gross Domestic Product (GDP) and employment of approximately 25.0% of labour force in Nigeria (Bilau, Ajagbe, Kigbu and Sholanke, 2015). The successful execution of projects in the industry requires the input of enormous resources managed by various stakeholders who are either professionals or non-professionals (Anyanwu, 2013; Owolabi and Olatunji, 2014). According to Owolabi and Olatunji (2014) the roles of these professionals in the life cycle of a building span from inception through design, construction, completion, maintenance and to terminal demolition. The study identified the list of the professionals actively involved in the construction industry to include but not limited to, Architects, Builders, Estate Surveyors and valuers, Land Surveyors, Quantity Surveyors, Town Planners, Civil, Electrical, Mechanical and Structural Engineers. Anyanwu (2013) observed that a Builder is the professional at the hub of the physical construction of buildings. The Builder carries out his building production role by taking charge of the activities on a building construction site in translating designs, working drawings, schedules and specifications into a physical structure. The National Building Code (NBC) (2006) specifically stated that the management of the execution of the building works together with the supervision of artisans and tradesmen shall be carried out by a registered Builder. The code also stated that other professionals are expected to supervise what is being done by the Builder in line with the inputs which they made during design. However, studies have opined that most of the craftsmen and tradesmen employed during construction are unqualified, unskilled and lack the adequate knowledge for faultless execution of operations, hence the success of completing any construction project depends heavily on the quality of supervision given to them (Alwi, Keith and Sherif, 2001; Shinde, Gupta and Magdum, 2014). In corroboration Chukwuji (2012) observed that every construction operation especially in complex building projects usually have large number of craftsmen, artisans and labourers who must be properly supervised to ensure that they carry out their various jobs according to production drawings and specifications. Shinde, Gupta and Magdum (2014) opined that the quality of supervision is determined by the skill and competencies of the supervisor. For adequate accountability, authority and responsibility are usually given to the supervisor for planning, leading, coordinating and directing the work of others in order to achieve the overall objective of the group. However, Agwu (2013) reported that incidences of building failures associated with poor construction supervision have become an issue of foremost concern in Nigeria's major cities. The study noted the frequent collapse of residential and commercial buildings under construction while, many others crumble while being occupied, resulting in many lives being lost and properties worth billions of naira destroyed. The study also attributed some of the poor construction supervision to incompetent personnel, hence noted that during construction, the consultants and the contractors must have competent persons on site to monitor work as it progresses. Studies have observed that, improper construction site supervisions have led to problems on site including collapse of trenches, structural collapse and injuries arising from falling objects like tools, debris and equipment, poor quality, rework and abandonment (Agwu, 2013; Shinde, Gupta & Magdum, 2014; Hackman, Acheampong, Agyekum & Ayarkwa, 2015). The need for construction site supervisors to understand the requirements that have been established to supervise sites effectively provided the impetus

for this study aimed at providing insight into the required supervisory competencies and factors affecting them for effective projects delivery in Uyo, Nigeria.

1.1 Objectives of the study

For the purpose of achieving the aim of this study the objectives were to: firstly, evaluate the extent of application of supervisory functions by selected professionals, and secondly, assess the factors affecting the quality of supervisions of the selected construction professionals in Uyo, Nigerian.

1.2 Research hypotheses

The first hypothesis postulated for this study, states that there is no significant variation in the extent of application of supervisory functions among the selected professionals in Uyo. The second, states that there is no significant variation in factors affecting the quality of supervision by the selected professionals in the study area. The results of these hypotheses will provide an insight into the importance of supervisory functions in project delivery in the study area. The results will also enlighten the stakeholders in the construction industry on the supervisory functions that can enhance project delivery as well as their pit falls in Nigeria.

2. REVIEW OF RELATED LITERATURE

The literature review hereafter focused on explaining quality supervision, identifying some competencies requirement of construction supervisor and factors affecting effective supervision of building projects.

2.1. Quality supervision and competencies of a supervisors

Construction supervision is the planning, leading, coordinating and directing the work of others in order to ensure that the final product is in agreement with the conceived design (Ojo, Olabintan, Ojo and Salami, 2013; Shinde, Gupta and Magdum, 2014). Effective supervision encompasses all inspection, observations and actions taking on site to ensure that an erected building conforms to design and specification at various sub-stages of construction process, involving numerous and complex activities that only well trained professionals can handle (Ojo, Olabintan, Ojo and Salami, 2013). Alwi et al. (2001) observed that quality supervision ensures that available resources are effectively and efficiently used, as the effectiveness of supervisors' efforts is judged by how well each phase of the construction process is managed, and by the value of the end products or services produced.

Kadushin and Harkness (2002) similarly opined that supervisors can offer valuable educational, administrative, and social support which can contribute to worker effectiveness and translate into quality service delivery. The Institute of Cost Accountants of India (ICAI)(2014) identified the function of a supervisor to include; effective communication of orders, introduction of new methods of performing work, making the work interesting, selecting the workers, induction of new employees, training the employees, handling grievances, enforcing discipline, enforcing safety and enforcing

quality. Hardison, Behm, Hallowell and Fonooni (2014) Identified construction supervisors' competencies from many other studies to include; establishing effective communication, establishing positive leader/member exchanges, knowledge of routine/non-routine work tasks, knowledge and application of effective team building skills, assessing employee stress levels, directing worker tasks and responsibilities, disciplinary procedures and conflict resolution, job planning and organization of work flow and methods of safety promotion.

Similarly, Shinde, Gupta, and Magdum (2014) identified the role and responsibilities of a site supervisor to include; reading and understanding Designer or Architect's drawings; helping foremen and labours to understand the problem and providing solution; reading and writing reports for inward and outward of material as well as maintaining labour muster; planning labour and activities; understand quality specifications; mediating between designer and worker; and Maintaining co-ordination between other supervisors and managers. These studies therefore, served as sources of the supervisor's functions and used as a basis of evaluation of the professionals' supervisory competence in this study.

2.2. Factors affecting quality of site supervision

Some studies have found that the quality of supervision can be influenced by several factors which include: Unfavourable working conditions; lack of commitment of all project participants; supervisors' competence; lack of top management support; indecisiveness of project participants; improper monitoring and feedback systems; coordination among project participants; negative attitude of project participants; conflicts among project participants; bad weather condition; aggressive competition during tendering; improper site layout and improper tendering process (Hackman, Acheampong, Agyekum and Ayarkwa, 2015). Others include: acute shortage of skilled supervisors; lack of amenities on construction sites; experience of supervisors ; unsustainable carrier; poor staffing of firms; Poor projects design; vague or scanty contract documentation; inadequate procurement processes; late procurement of project supervisor ; unattractive working conditions; unclear or vague scope of supervision ; incompetence of supervisors; negligence and outright corruption, supervisor work load and project complexity (CrossRoad, 2015).

2.3. Some previous studies on construction supervision

Several studies have been carried out to establish the importance of supervision on construction projects. Alwi, Keith, and Sherif (2001) assessed the effects of quality supervision on rework in the Indonesian Context based on questionnaire targeted on large contracting organisations in Jakarta and interviews held with ten project managers and supervisors from ten building construction sites. The study found that the quality of site supervision in Indonesia is directly related to the supervisor's level of experience gained through formal training. Hence, the study explored the relationship between the quality of site supervision, expressed as training cost, and the rework cost borne by contractors in high-rise building construction, to suggest that the quality of site supervision, represented by the supervisors' level of experience gained from formal training, has a strong negative relationship with the rework cost on a construction project.

Hardison (2012) investigated the knowledge-based competencies necessary for the front-line construction supervisor, utilizing survey based research that is administered through subsequent rounds of data collection that included controlled and anonymous feedback (Delphi-technique). The study utilized a panel of fourteen construction safety

experts from American Society of Safety Engineers Construction Practice Specialty list served on LinkedIn.com to establish fifteen key knowledge-based competencies suggested to be most important to the construction supervisor with respect to improving construction site safety performance out of the thirty two identified knowledge-based competencies. Ojo, Olabintan, Ojo, and Salami (2013) carried out a study on design and construction supervision as structurally sustainable tools for building failure/collapse in Nigeria. The study examined records of some reported building failures/collapses, structural defects in some selected roofs and the extent of professional involvement in their design and construction in Nigeria. It also identified those factors responsible for the failure of building design and construction supervision process. The paper concluded that structural sustainability can be greatly improved upon through design and construction supervision by depending on highly skilled professionals with intention to minimize potential ambiguity, disputes, fraud, and building collapses/failures.

Hardison et al. (2014) carried out a study to prioritize the most important knowledge-based competencies for front-line construction supervisors for effective site safety in the United States using the Delphi technique. The study provided insight on additional competencies that should be included among the 30-hour OSHA training topics for the construction site supervisor. The study concluded that for effective management of construction site safety by supervisors, they must possess both the baseline 30-hour training and other competencies relating to pre job planning, organizing of work flow, establishing effective communication, and a knowledge of routine and non-routine work tasks. Shinde, Gupta and Magdum (2014) investigated the impact of quality supervision on rework in Indian construction industry based on a survey targeted on large contracting organizations in Pune and nearby area. The Study utilised questionnaire administered on contractors, designers, clients and interviews held with eight project managers and supervisors in order to supplement the findings of the questionnaire survey. The study found that unskilled site supervision is the principal cause of rework during construction, and concluded that supervision is more likely to be dependent on the experience, instead of the number of supervisors involved in a project. Agwu (2013) examined the relationship between poor construction supervision and unsustainable building construction practices with regard to incessant building failures in six major cities in Nigeria between September 2012 and August 2013. The paper adopted descriptive research design using questionnaire administered on 397stratified randomly and area clustered selected registered members of Nigerian Institute of Building (NIOB) from six major cities in Nigeria. Results of the study indicated that significant relationship exists between poor construction supervision and unsustainable building construction practices (use of substandard designs, materials, manpower & procedures)/building failures in Nigeria.

Ling and Tan (2015) investigated the association between a site supervisor's attributes and project outcomes. The study identified the attributes of site supervisors that are significantly correlated with project outcomes (cost, time, quality and client satisfaction), and examined if site supervisors with different educational levels and job experience have different attributes. The study utilised questionnaire designed based on the attributes identified from the literature review and distributed among Singapore-based construction site supervisors. The results showed that site supervisors with IT skills are likely to have projects with good time, quality and satisfaction outcomes, while the projects of supervisors with longer work experience show significantly better time performance and higher client satisfaction. It was therefore recommended that contractors employ site supervisors who have at least a construction diploma, IT skills and possess job experience in order to optimise their project outcomes.

Hackman, Acheampong, Agyekum and Ayarkwa (2015) carried out a study to identify the factors affecting construction site supervision in Ghana. The study adopted a questionnaire survey approach to elicit information from seventy-six respondents. The data were analysed using descriptive statistics and presented in tables. The study showed that favourable working condition; commitment of all project participants; arrangement of site layout; top management support and indecisiveness of project participants were the most important factors affecting supervision of projects. The study which was based in Ghana did not consider some factors which are obtainable in Nigeria together with the expected competencies of the supervisors. The study on the nature of supervisory competencies of project managers and the factors influencing quality of supervision is therefore scarce in the study area, hence this study.

3. METHODOLOGY

This study adopted the exploratory and deductive cross-sectional survey approach utilizing structured questionnaire which was piloted by survey of professionals who are conversant with the topic. The adopted approach quickly helped to reveal, prevalence and relationships (and non-relationships) among variables at a particular point in time, a deductive approach which does not emphasize on processes or changes through time or differentiating cause and effect from simple association (Mann, 2003; Saunders, Lewis and Thornhill, 2009). The instrument was tested for reliability and validity and found to be of high level with Cronbach α of 0.82 and 0.76 for the supervisory roles and influencing factors. These values were considered highly acceptable, since the value of alpha is desirable with the range higher than 0.6 (Gliem and Gliem, 2003).

The study population consists of Quantity Surveyors, Architects, Builders and Engineers who practice as construction project managers (Ameh & Odusami, 2014) in Uyo metropolis. The sample frame comprised seventy four project managers obtained from the structured questionnaire returned out of a total of 105 administered on project managers in Akwa Ibom State. The choice of project managers as respondents is due to the view that the main role of the project manager is in the administration of the project. The project manager manages the clients and co-ordinates all other stakeholders which require adequate understanding of all the manpower related issues (Shibani and Sukumar, 2015).

This study identified eighteen supervisory functions from Hardison (2012), The Institute of Cost Accountants of India (ICAI)(2014), Hardison, Behm, Hallowell and Fonooni (2014), Shinde, Gupta, and Magdum (2014), Hardison et al. (2014) and Ling and Tan (2015), while twenty two factors affecting quality of supervision were identified from Hackman, Acheampong, Agyekum and Ayarkwa (2015) and Crossroad (2015). The project managers were classified as Architects, Builders, Quantity Surveyor and Engineers according to their first degree educational background. They were then requested to evaluate the extent of application of the identified supervisory functions as well as the factors affecting their quality of supervision.

The measurements were on a five point Likert-scale namely: poor=1, low=2, moderate=3, high=4 and very high=5. In analyzing the collected data, the total weight value (TWV) was then calculated for each of the variables. The TWV was arrived at from the summation of the products of the number of responses for the rating of each variable and the respective weight value for each rating. The relative importance index (RII) method was used in line with the formula used by Ugwu and Haupt (2007) and Enshassi, Mohamed and Abushaban (2009) as shown in Equation 1

$$RII = \sum \frac{W}{A} N \qquad \text{……..(1)}$$

Where W is the weight given to each variable by the respondents and ranges from 1 to 5; A – the highest weight = 5; N – the total number of respondents.

A cut-off score of RII computed was determined by summing the weights and dividing by the total number of weighting items and highest weight respectively: (1+2+3+4+5)/5/5 = 0.60. Thus, events that have RII that are higher than 0.60 are defined as important, those with RII equal to 0.60 are moderate, while those less than 0.60 are less important. The variation in the application of supervisory functions and the influencing factors were analysed using Kruskal Wallis tests.

4. PRESENTATION AND DISCUSSION OF RESULTS

The result and discussion are presented in this section.

4.1. Characteristics of respondents used for the study

For an understanding of the characteristics of the people whose perceptions were investigated, the sex, age, profession, qualification and experience of the respondents were evaluated and the result presented on Table 1.

Table 1: Descriptive results of Project managers Features

Features	Sub features	N	%
Sex	Male	63	85.1
	Female	11	14.9
	Total	74	100
Age	1-17yrs	0	0
	18-60yrs	60	81.1
	>60yrs	14	18.9
	Total	74	100
Professional affiliation of project manager	Quantity Surveyor	16	21.62
	Architect	19	25.68
	Builders	15	20.27
	Engineers	24	32.43
	Total	74	100
Qualification	OND	1	1.35
	HND	5	6.76
	B.Sc	20	27.03
	M.Sc	38	51.35
	P.hD	10	13.51
	Total	74	100
Experience	1-5yrs	06	8.11
	6-10yrs	13	17.57
	11-15yrs	17	22.97
	16-20yrs	24	32.43
	>20yrs	14	18.92
	Total	74	100

The result on Table 1 shows that majority of the project managers were male who are adults. Majority of the respondents equally have the basic qualification and experience expected of project managers. The result also shows that majority of professionals who practice project management were chosen in this study. Hence, the results generally imply that the selected respondents have the required features to provide reliable information for this study.

4.2. Evaluation of supervisory competencies application of selected professionals

The first objective is to evaluate the extent of application of supervisory functions during project execution. For this purpose, eighteen supervisory functions identified were presented to project managers to evaluate among selected professionals. The result presented on Table 2 shows that 41.12% of the supervisory functions attained the cut-off level among Quantity Surveyors, 55.55% for Architects, 66.67% for Engineers and, 83.33% for Builders. The result is an indication that there is variation in the level of application of supervisory functions among the various professionals. The result shows that the Quantity Surveyors were very good at communicating orders, selecting the workers, having good knowledge of work routine and enforcing discipline; Architects were very good at interpretation of drawings, safety assurance and effective communication of orders.

Table 2: Project managers' evaluation of supervisory competencies application of professionals

No of professional evaluated	Qty Svyors N= 16		Architect N=19		Engineers N=24		Builders N=15	
Supervisory functions of Builders	RII	Rank	RII	Rank	RII	Rank	RII	Rank
Job planning & work flow organization	0.56	9	0.63	8	0.68	9	0.83	1
Good knowledge of work routine	0.60	6	0.64	7	0.70	6	0.80	2
Directing worker tasks and responsibilities,	0.50	15	0.66	4	0.77	1	0.80	2
Knowing & enforcing safety	0.64	3	0.71	2	0.68	9	0.77	4
Reading & understanding the drawings	0.62	4	0.73	1	0.72	5	0.77	4
Knowing & enforcing quality	0.52	11	0.44	17	0.68	9	0.77	4
Effective communication of orders	0.66	1	0.68	3	0.74	2	0.77	4
Making the work interesting	0.58	8	0.53	11	0.53	15	0.72	8
Reading and writing reports for work	0.60	6	0.63	8	0.69	8	0.72	8
Selecting the workers,	0.66	1	0.66	4	0.73	3	0.71	10
Introduction of new work methods	0.52	11	0.49	15	0.54	13	0.69	11
Induction of new employees,	0.40	18	0.40	18	0.41	18	0.68	12
Training the employees	0.52	11	0.51	13	0.54	13	0.67	13
Enforcing discipline	0.62	4	0.61	10	0.70	6	0.63	14
Establishing positive team work	0.54	10	0.52	12	0.66	12	0.61	15
Assessing workers stress levels	0.52	11	0.51	13	0.47	16	0.56	16
Co-ordination between workers & managers	0.44	17	0.65	6	0.73	3	0.49	17
Handling grievances	0.50	15	0.47	16	0.45	17	0.45	18

The result also shows that Engineers were better at directing worker tasks and responsibilities, knowing & enforcing quality and selection of workers, while builders were better at job planning & work flow organization, adequate knowledge of work routine and directing worker tasks and responsibilities. The results generally indicate that the implementation of supervisory functions increase from Quantity surveyors through the Architects and Engineers to Builders. The possible explanation for this finding is that in most institutions of learning where building is offered in Nigeria, significant concern is placed on construction programme, construction methodology, and quality and safety

management knowledge (Nigerian Institute of Building [NIOB], 2002). However, it can be seen that the percentage range of competencies obtained among the Professionals is up to 42.2%, and the implication of this is that if the competence of a Professional is not properly considered before assigning supervision as much as 42% loss in performance can be experienced. This is in line with the observation by Hardison *et al.* (2014) that selection of supervisor should be based of adequate competencies.

4.3. Comparison of supervisory competencies among professionals

In order to ascertain if the variation observed in the supervisory competencies among the selected professional is statistically significant and that the variation does not occur by chance the first hypothesis was postulated as earlier stated. The hypotheses were tested with Kruskal Wallis test at $p \leq 0.05$. The decision rule is that if p-value > 0.05, the hypothesis is accepted, but if p-value ≤ 0.05 the hypothesis is rejected. The result is presented on Table 3.

Table 3: Comparison of Professionals' supervisory competencies

Items compared among Professionals	Extent of use supervisory competencies
No of variables (N)	18
Mean Rank for Quantity Surveyors	24.00
Mean Rank for Architects	29.39
Mean Rank for Engineers	41.83
Mean Rank for Builders	50.78
Chi-Square	18.079
P-value	0.001
Significance level	0.050
Decision	Reject

Table 3 shows that the p-value for the first hypothesis is 0.001, which is less than the significance level of 0.05, thus the null hypotheses was rejected, indicating that there is significant variation in the extent of application of supervisory functions among the professionals and that the variation is not only caused by random effects of chance. The result implies that professional competence has significant impact on the extent of supervision. The importance of professional competence on the supervisory competencies may be attributable to the observation by Sarda and Dewalkar (2016) that the management of projects by consultants to overcome every possible error in the project depends on the application of skills, knowledge and experience. This is also supported by Shinde and Kulkarni (2016) which noted that the skillfulness and competence along with experience of supervisors play an important role in reducing the amount of rework in construction in India. The variation may also be attributable to the variation in the background education (regarding project management related courses) of different professional groups practicing project management (Ameh & Odusami, 2014).

4.4. Evaluation of factors affecting quality of supervision

The second objective assessed the factors affecting the quality of supervision by the selected professionals. For this purpose twenty two factors identified were presented to project managers to evaluate among the professionals. The result is presented on Table 4.

Table 4: Project managers' evaluation of factors influencing supervision

Professionals	Qty Svy		Architect		Engineers		Builders	
No of professionals	N= 16		N=19		N=24		N=15	
Factors influencing supervision	RII	Rank	RII	Rank	RII	Rank	RII	Rank
supervisors' competence/knowledge	0.72	1	0.65	4	0.65	1	0.70	2
Level of available resources	0.69	2	0.63	5	0.64	3	0.50	10
negligence and corrupt practices	0.68	3	0.61	11	0.51	21	0.44	18
Unfavorable working conditions	0.68	3	0.52	22	0.60	10	0.70	2
lack of top management support	0.68	3	0.68	1	0.60	10	0.66	5
poor commitment of project participants	0.65	6	0.53	18	0.47	22	0.46	12
improper monitoring and feedback systems	0.65	6	0.63	5	0.61	7	0.44	18
lack of amenities on construction sites	0.65	6	0.53	18	0.58	13	0.52	20
Effectiveness of communication	0.64	9	0.63	5	0.58	13	0.46	12
bad weather condition;	0.63	10	0.60	13	0.54	19	0.44	18
poor contract documentation	0.63	10	0.58	15	0.61	7	0.44	18
unclear or vague scope of supervision	0.61	12	0.61	11	0.62	6	0.46	12
Supervisor's work load	0.61	12	0.66	3	0.63	4	0.62	8
Poor projects design	0.61	12	0.55	17	0.60	10	0.70	2
experience of supervisors	0.61	12	0.68	1	0.65	1	0.72	1
unattractive working conditions;	0.61	12	0.62	8	0.61	7	0.64	6
project complexity	0.60	17	0.58	15	0.55	17	0.46	12
improper site layout	0.57	18	0.53	18	0.58	13	0.46	12
late engagement of project supervisor	0.57	18	0.62	8	0.63	4	0.64	6
Supervision time	0.57	18	0.62	8	0.54	19	0.48	11
shortage of skilled supervisors	0.56	21	0.60	13	0.56	16	0.42	22
inadequate procurement processes	0.53	22	0.53	18	0.55	17	0.46	12

Table 4 shows that the project managers who are quantity surveyors were significantly influenced by 77.27% of the factors identified, the project managers who are architects were significantly influenced by 63.64% of the factors identified. The result also shows that the project managers who are Engineers were significantly influenced by 54.55% of the factors identified, while the project managers who are Builders were significantly influenced by 36.36% of the factors identified. The Quantity Surveyors are mostly influenced by supervisors' competence/knowledge, level of available resources and negligence and corrupt practices. The Architects are mostly influenced by lack of top management support, level of experience, and extent of work load. The Engineers are mostly influenced by level of competence/knowledge, experience, and level of available resources. The Builders are mostly influenced by level of experience and knowledge, poor projects design and unfavourable working conditions.

The result showed decrease in total percentage influence of factors from the Quantity surveyors through the Architects and Engineers to Builders with up to 40.9% difference. The possible explanation for this finding is that most Builders who are project managers as part of their training are proficient in job planning & work flow organization, work routine, directing worker tasks and responsibilities as found in Table 2 in line with the findings of Ameh and Odusami (2014). The implication of this is that if primary disciplines of project managers are taken into consideration before assigning supervisors, then the expected quality of supervision may be reduced up to about 40.9%.

4.5. Comparison of factors influencing quality of supervision among professionals

In order to ascertain if variation in the factors influencing the quality of supervision of the professionals is significant, the second hypothesis was postulated as earlier stated. The hypothesis was tested with Kruskal Wallis test at $p \leq 0.05$. The decision rule is that if p-value > 0.05, the hypothesis is accepted, but if p-value ≤ 0.05 the hypothesis is rejected. The

results presented on Table 5 show that the p-value for the second hypothesis is 0.018, which is less than the significance level of 0.05, thus the null hypotheses was rejected, indicating that there is significant variation in influence of factors on the quality of supervision of the professionals and that the variation does not occur by chance. The variation in influence of the factor may be attributable to the variation in the supervisory competences of the Professionals. The result somehow supports Ling and Tan (2015), Sarda and Dewalkar (2016) and Shinde and Kulkarni (2016) that skillfulness along with experience of supervisors play an important role in resource management.

Table 5: Results of Kruskal-Wallis test for Comparison factors influencing supervision

Items compared	Effect of factors on supervision
No of variables (N)	22
Mean Rank for Quantity Surveyors	32.70
Mean Rank for Architects	41.77
Mean Rank for Engineers	46.98
Mean Rank for Builders	56.55
Chi-Square	10.078
P-value	0.018
Significance level	0.050
Decision	Reject

The result also suggests that the primary discipline of those who practice project management in Nigeria does determine the quality of supervision. This also supports Ameh and Odusami (2014) which attributed the variation in the background education (regarding project management related courses) of different professional groups practicing project management to their performance as project managers.

5. CONCLUSION AND RECOMMENDATIONS

The study has provided insight into the required professional supervisory competencies and factors affecting them for effective projects delivery in Uyo, Nigeria. The study has evaluated eighteen supervisory functions of construction project managers and twenty two factors influencing the quality of supervision of the managers. It was found that 41.12% of the supervisory functions evaluated attained the cut-off level among Quantity Surveyors, 55.55% for Architects, 66.67% for Engineers and, 83.33% for Builders. This is an indication that the competences of the practicing project managers vary according to their primary professions. This variation was found statistically to be significant and not caused by random effects of chance. The result is an indication that the percentage range of competencies obtained among the Professionals is up to 42.2%, and the implication of this is that if the competence of a Professional is not properly considered before assigning supervision, as much as 42% loss in performance can be experienced.

It was also found that the project managers who are quantity surveyors were significantly influenced by 77.27% of the factors identified; those that are architects were significantly influenced by 63.64% of the factors, those who are Engineers were significantly influenced by 54.55% of the factors, while the project managers who are Builders were significantly influenced by 36.36% of the factors identified. It was found that there was decrease in total percentage influence of factors from the Quantity surveyors through the Architects and Engineers to Builders with up to 40.9% difference. This variation was found to be statistically significant and not caused by random effects of

chance. The possible explanation for this finding is that in most Builders who are project managers are proficient in job planning & work flow organization, work routine, directing worker tasks and responsibilities. The implication of this is that if primary disciplines of project managers are taken into consideration before assigning supervisors, then the expected quality of supervision may be reduced up to about 40.9%

Consequent upon the findings of this study, it is concluded that the competencies of project managers depend on their primary profession, and the factors influencing the quality of supervision also depend on the primary professional affiliation of a practising project manager. It was also concluded that if the primary professional affiliation is not considered before assigning supervisory function, projects may suffer up to 40% pitfall in terms of performance. It is therefore recommended that developers and project managers should adequately assess the competence of a supervisor arising from the primary professional training before assigning supervisory functions on complex jobs. It is also recommended that the provisions of the National building Code be enforced, so that professionals can carry out roles in their area of competence to avoid professional incursion. Professionals should ensure mutual collaboration and eschew greed and corrupt practices.

6. LIMITATIONS OF THE STUDY

This study is limited to the eighteen supervisory functions and twenty two factors selected from literature and the views of project managers or their representatives who were considered as chief project administrators. Since the study was also limited to 74 project managers who returned their questionnaire, the result could be improved by further studies on other stakeholders and other competencies and factors not covered in this study as well as increased respondents. In spite of these limitations the result could provide reasonable insight into important supervisory competencies and factors influencing them with a view to enhancing construction projects performance in the study area, as well as guide for further studies.

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