

## **Effective Project Management: A Veritable Tool for Successful Construction Project Procurements in Nigeria<sup>1</sup>**

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### **ABSTRACT**

The study aims at evaluating the project management process and how it influences successful construction project procurement in Nigeria. To achieve five research objectives were set up centering on ascertaining the effect of effective estimation and tendering process on construction project delivery in Nigeria, identifying the estimation and tendering processes that integrates with the construction project delivery, determining the project management factors that affects the Construction Project estimation and tendering in Nigeria, and identifying the hindrances to the application of estimation and tendering process for successful construction project delivery. Also two hypotheses were formulated. The study is a descriptive study survey with population delimited to the workforce of construction contracting firms, namely Arab Contractors Imo State, Marcon Engineering Ltd Imo State and Gosh Projects Imo State; and construction consulting firms- Network Projects Imo State, Keliyke Imo State all in South Eastern part of Nigeria. A sample size of 200 was randomly selected, which was divided among the among the selected firms of study, and which cut across construction professionals such as Architects, Quantity Surveyors, Building Technologists, Civil/Structural Engineers, Electrical Engineers, Mechanical Engineers, Project Managers etc.. The research being a descriptive study involved the use of structured questionnaires delivered to the various respondents. Analytical tool used for the analysis was simple percentage for the category of demography of respondents, descriptive statistics for the evaluation of effects and linear regression analysis comprising F-test and ANOVA for the investigation of factors. In other to ensure error free computation, a statistical software package SPSS was employed. The study concludes that there is significant relationship between estimation and tendering process and construction project delivery; also the quality of estimation and tendering skills by procurement professionals influence the quality of project delivery in construction industry.

**Keywords: Procurement, Project Management, Construction Project, Estimation, Tendering**

### **1.0 INTRODUCTION**

Across many decades, man has relied on procurement to acquire what he needs from others. His needs can be for a service, a product or both; this dependence does not leave behind, the inclusion

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of and synergy with construction projects. According to Muhammed et al (2015), *The success of performance of construction projects in Nigeria is tied to the impact of procurement strategy or policy used in providing the building. Procurement policies significantly influence the success of construction projects since they are designed to provide solutions to specific project needs or conditions.*

Project procurement strategy according to Building and Construction Procurement Guide (2014) is a key factor in optimising value-for-money outcomes from infrastructure investments. A comprehensive procurement strategy that demonstrates careful consideration and analysis of all available options will enable project owners to identify the delivery model and procurement method most suitable for the project in question. By using an appropriate delivery model and procurement method, project owners can expect to attain improved value-for-money outcomes as risks will be most effectively managed and the incidence of contractual disputes, cost and time overruns is likely to be reduced.

In other vein, there will be stiffness and lack of appropriate delivery model and method in procurement strategy, especially in construction projects, if there lacks project management process. There is a “lock-step” relationship between the project management process and the procurement process (Hairston, 2005). According to Hairston (2005) the integration of the Procurement Process and the Project management process provides the corporate and technical basis that works successfully for construction projects, capital acquisitions, plant start-ups and implementation of strategic procurement processes.

The very strong implication of project management in construction project procurement is as the result of the obvious from many research works that procurement in construction projects is more than being the process of obtaining goods and services from another for some consideration. According to Chikara (2012), the execution of modern construction projects requires speed and involves interrelationship of the voluminous interdependent activities. In addition, construction projects procurement has been acknowledged as the procurement of a complex system, which offers insights from the procurement of other types of complex systems (Hughes, 2012). Its complexity stems from an extensive process and diverse systems (Idoro, 2012; Hughes, 2012; Gollenbeck, 2008; Harris & McCaffer, 2005; Anyadike, 2000). This makes construction specific procurement more complex unlike other forms of general procurement (Ibrahim, 2008). Consequently the contemporary construction procurement goes beyond the traditional concept of just integration of design-bid-build procurement system (Mbamali & Okotie, 2012; Gollenbeck, 2008), to a more complex concept of management oriented systems, integrated systems or, discretionary contracts (Mathonsi & Thwala, 2012; Babatunde, *et al.*, 2010; Harris & McCaffer, 2005). These complexities gave credence to necessity of project management and its process. Therefore to ensure a value-added contribution to a construction project, the procurement professional must first understand the definition of a project, project management, and learn how the Project Management Process of Initiation, Planning Execution, Control and Closeout fits into the procurement process.

## 1.2 STATEMENT OF PROBLEM

Project procurement management is simply the processes necessary to purchase or acquire products, services or results needed from outside the project team. So in other words for construction industry, it is the same process, but from outside not just any project team but the construction project team. According to PMBOK (2008), this includes the contract management and change control processes required to develop and administer contracts or purchase orders issued by authorized project team members.

The effectiveness and the efficiency of the procurement processes have considerable impact on the success or failure of projects. Ling et al. (2004) and Idoro (2007) maintain that the outcome of projects is the gauge for evaluating the performance of procurement options. This brings to light the fact about the performance of construction project procurement in Nigeria. Since according to Idoro (2007) that outcome of projects is a litmus to ascertain the success of project procurement, it is important to note that construction industry in Nigeria has been routinely accused of being wasteful, inefficient, and unsafe, falling short of quality and quantity targets, and being late in delivery (Ibrahim & Musa-Haddary, 2010; Omole, 2001). Furthermore, construction projects in Nigeria cost more than similar ones in other parts of the world (Nasiru, et al. 2012; Quantity Surveyors Registration Board of Nigeria-QSRBN, 2012). Its performances are replete with: abandonments; cost and time overruns; poor workmanship; poor management capability; financial difficulties; poor planning; poor mechanization and high frequency of litigation (Odediran, et al. 2012; Oladimeji & Ojo, 2012; Aniekwu & Audu, 2010; Muazu & Bustani, 2004; Achuen, et al. 2000; Adams, 1997).

One of the challenges to procuring construction projects in Nigeria is the stick by some institutions to the practice of traditional contract method, with a resistance to move from the Design-Bid-Build (DBB) approach to Design-Build Method. In the Nigerian construction industry, although the adoption of DB is a recent development, it has also gained wide acceptance. Ogunsanmi and Bamisile (1997) and Odusami (1999) find that the DB method is now widely used for the procurement of construction projects. In a survey of construction projects, Idoro (2006) finds that many of the projects sampled were procured by the design-build method. The study indicates that design-build is gradually gaining wide acceptance in the Nigerian construction industry. Even with gradual wide acceptance, some institutions practice DB with a traditional project management approach.

Traditional project management systems do not offer a clear view, in global terms, regarding how the procurement process is being developed because the criteria used to control the process is usually too general. Many researchers have attributed the underperformance of construction project procurement due to: non-adoption of project management techniques; incompetence and inexperience; inefficient policies and practices; weak institutions and an adverse business environment; and complex social and cultural practices (Odediran, et al., 2012; Aniekwu & Audu, 2010; Bala, et al., 2009; Muazu & Bustani, 2004; Achuen, et al., 2000; Adams, 1997). Also Contractor's planning capability and procurement methods according to Azhar, et al. (2008), are part of the qualitative significant factors affecting construction project procurement performance; hence, it needs adequate attention. This becomes necessary because there is an element of entrepreneurial risk associated with the assignment of procurement tasks due to lack of understanding and implementation of factors to achieve results from work performed by others

(Anyadike, 2000). The study therefore aims at evaluating the project management process and how it influences successful construction project procurement in Nigeria.

### **1.3 RESEARCH OBJECTIVES**

To achieve this research, the following objectives were set up:

- To ascertain the effect of effective project management on construction project procurement in Nigeria
- To identify the project management process that integrates with the construction project procurement process
- To determine the project management factors that affects the Construction Project Procurement in Nigeria.
- To rank the project management factors influencing the Construction Project Procurement in Nigeria.
- To identify the hindrances to the application of project management process for successful construction project procurement.

### **1.4 RESEARCH QUESTIONS**

- What are the effects of effective project management on construction project procurement in Nigeria?
- What is the project management process that integrates with the construction project procurement process?
- What are the project management factors that affect the construction project procurement process in Nigeria?
- How are the project management factors influencing the Construction Project Procurement in Nigeria ranked?
- What are the hindrances to the application of project management process for successful construction project procurement?

### **1.5 RESEARCH HYPOTHESIS**

Ho1: There is no significant relationship between project management process and procurement process.

Ho2: The quality of project management skills by procurement professionals does not influence the quality of project procurement in construction industry.

Ho3: There is no significant difference between lack of project time management and procurement time overrun.

## **1.6 SIGNIFICANCE OF STUDY**

This study will contribute valuable knowledge to construction projects procurement professionals in developing countries, especially in Africa. The outcome of this research will be used to enhance and facilitate result proven procurement best practice in the construction industry and as such will help generate needed knowledge for efficiency in project delivery in Nigeria.

Due to the need for knowledge upgrade within academia, this study will enrich literature within academia for the training of construction professionals, as well as eventually contribute to high performance in the Nigerian construction industry. The significance of the study stems from the contribution that accrues from the construction industry to the economy.

An efficient construction sector, according to Oyewobi and Ogunsemi (2010), is a pre-requisite to effective national development. This is because, the products of the construction industry are desired mainly for the services which they help to create, as most business, social, religious, economic and, industrial activities operate on her structural base (Nwachukwu, 2008). However, all these benefits can only accrue from the industry to the economy when construction projects are efficiently delivered.

This study's result and recommendations will be of immense benefit to the construction professional bodies like Nigeria Institute of Quantity Surveyors (NIQS), Nigeria Institute of Architects (NIA), Nigeria Institute of Building (NIOB), Nigeria Society of Engineers, Institute of Project Management Nigeria (IPMN) etc. The result of the study will help bring the attention of regulating agencies like COREN etc to the undisputable need and involvement of project management for successful construction procurements in Nigeria, and could be included as a criterion for assessment and qualification of professional in the industry.

The study result will be disseminated through: conferences, workshops, journal publications, and academia-teaching. The research result will benefit: indigenous and foreign contractors in Nigeria, construction professionals, construction clients, and academic institutions.

## **1.7 SCOPE AND DELIMITATION**

This study investigates effective project management as a veritable tool for successful construction projects procurement in Nigeria. This study was conducted in South Eastern Nigeria and delimited its investigation to ascertaining: project management process integration with the construction project procurement process, project management factors affecting the construction project procurement in Nigeria, and the hindrances to the application of project management process for successful construction project procurement.

This study was delimited to contractors' and construction professionals in Imo State with procurement and project management strong experience.

## **2.0 REVIEW OF LITERATURE**

### **2.1 The Construction Industry**

The construction industry is regarded as one of the oldest sectors organized on a project basis (Gollenbeck, 2009). A cursory check on the facts about the Egyptian pyramids (3rd millennium B.C.), the aqueducts carrying water to cities and industrial sites that were constructed in Rome in 312 B.C., and other ancient milestones solidifies the claim. One thing that is common to all these historic structures is the use of both human and material resources which are planned, organized, coordinated and controlled for the sole aim of realizing the projects. It also involves a complex structure of different trades and professionals working in harmony towards the realization of the projects.

According to Jinadu (2007), the construction industry's strategic importance to any nation is due to the role it plays in the economy. It is responsible for the provision of infrastructure and contributes to a country's gross domestic product (Dada, 2012). The industry globally according Adindu (2012) accounts for about 10% of the world economy. Approximately 70% of construction investment is accounted for in the USA, Western Europe, and Japan. The continent of Africa accounts for about 1%. Per capita investment in construction in the developed world is approximately \$2 500 per annum as against \$46 per annum in Africa (Freeman, 2011).

The low level of construction investment in Africa and lack of human capital potential has created a huge infrastructural deficit and this account for the low socio economic growth of the continent. Hence, the construction industry is a sector that can assist the African continent to develop its economy as well as provide employment opportunity to its teeming population.

### **2.2 Nigerian construction industry**

The role the construction industry plays in an economy cannot be overemphasized. The Nigerian construction industry has served the Nigerian economy significantly with the creation of direct and indirect employment nationally. From the 80's till present day, the industry has grown to about 125 times its former size but this growth when put in perspective leaves a lot to be desired. The construction sector Oluwakiyesi (201) accounted for 1.4% of the Nigerian gross domestic product (GDP), in comparison to 1981 where the industry accounted for 5.8%. This decline is mainly due to the country's GDP growing 495 times in the same period.

Despite the construction industry having had an impressive growth rate of above 10% over the past few years, Nigeria still has only 30% of its 193,200 km road network paved as at 2011 (Muhammed et al, 2015). The general infrastructure and amenities in the country has been described as abysmal when compared to the investment that has gone in to the sector (Oluwakiyesi, 2011). Government funding for new and existing projects has increased steadily. Projects like the national rail revival, renovation of all airports, power station construction and many others have ensured the construction industry remains vibrant. However, unless the effectiveness of the industry is improved the industry will continue to stagnate.

## **Construction Procurement**

From the construction point of view (Ibrahim, 2008), procurement is broadly divided into two: general procurement and construction specific procurement. General procurement is concern with the acquisition of goods and services (Ibrahim, 2008). It is simple to execute in comparison to the construction-specific procurement (Ibrahim, 2008). Construction-specific procurement is a series of interdependent operations (process) undertaken within a well-defined framework (system) used in acquiring a construction project. According to Rashid *et al.* (2006) construction procurement is an organized method or process and procedure of obtaining or acquiring a construction product such as a house, shopping complex or road and jetty. It also involves arranging and coordinating people to achieve prescribed goals or objectives (Rashid *et al.*, 2006). According to Ibrahim (2008) construction-specific procurement is more complex than general procurement, hence the need for the management of the process to be undertaken by people with appropriate knowledge, skills, expertise and tools. Its complexity stems from its extensive process and variance of systems (Hughes, 2012; Idoro, 2012).

### **2.3 Construction Procurement Strategy**

To properly manage risks, it is important that procurement decisions are justifiable on the basis of documented facts and analysis. Soundly based decisions involve a comprehensive exploration of a range of potential delivery models and procurement methods to determine the approach best suited to each project. By methodically exploring all available options, project owners can ensure that opportunities for achieving increased value-for-money and improved infrastructure investment outcomes are readily identified and capitalised on (BCP Guide 2014).

The procurement strategy according to BCP guide (2014) is a core project document that presents the outcome of a rigorous procurement options analysis undertaken by the project owner to identify the recommended delivery model and procurement method for a project, taking into account the project's individual characteristics, risks and circumstances.

Procurement in construction is carried out through the application of a procurement strategy. The aim of a procurement strategy is to achieve the optimum balance of risk, control and funding for a particular project. Construction is an endeavor that involves various risk and this risks differ depending on the procurement strategies employed. Classified procurement systems as separated systems, integrated procurement systems, management oriented procurement systems and discretionary system. Catilidge (2009) and Walker and Hampson (2003) have all adopted a similar classification but while Skitmore (1998) relied on a relationship approach in his subdivision.

### **2.4 Construction Procurement Strategy and Project Management**

The relationship between project management and construction procurement is seen in the integration of project management process in the procurement strategy. An appropriate procurement strategy is typically developed during the evaluation or definition phases of a project and as such through the synergy with PM process forms a key determinant of successful construction project delivery (BCP guide 2014).

To develop an effective procurement strategy, it is important to:

- fully understand the project including key drivers, constraints and risks

- assess agency and market capabilities and capacity
- rigorously evaluate potential delivery models and procurement methods for suitability
- involve key stakeholders and experts as early as possible in the planning and development process
- challenge assumptions in order to better achieve desired outcomes
- use practical analytical techniques in the decision-making process

## **2.5 Construction Procurement Process and Project Management Process**

Construction procurement process is a series of operations or actions taken to achieve the intended aim of construction project procurement (Harris & McCaffer, 2005; Aqua Group, 1999). The scope of a construction procurement process is extensive and covers every aspect of project delivery (Idoro, 2012a; Hughes, 2012; Harris & McCaffer, 2005; Ayandike, 2000). According to Ayandike (2000), Harris and McCaffer (2005), it comprised:

- **Initiation**- identification of product or service
- **Preliminary**- feasibility studies, strategic and finance planning, preliminary estimation
- **Evaluation of project brief**- engineering/construction technology and costing, approximate quantities method-estimation
- **Design management**- detailed drawings and cost planning (cost allocation and target)
- **Contracts and procurement**-contractor selection (bid invitation and evaluation)
- **Manufacture and construction**- installation and construction (Actualization of plan)
- **Commissioning**- handing over and commissioning
- **Facility management**- operation and maintenance

This process works hand in glove with the project management process of

- Initiation
- Planning
- Execution
- Control
- Closeout

To effectively run the procurement process, the project management aspects of project planning and project implementation processes must be in place. Planning is a continuous process that

commences as soon as the decision on the investment is taken and does not end until the project is delivered. It flows directly into implementation and continues further.

Also, the choice of procurement route is influenced by project management factors like the conventional time-cost-quality model, project strategy, client organization, financial objectives, level of integration of design and construction required, risk management and project constraints (Lamour, 2011; Masterman, 2007) From the prevalent literatures researched, these project management factors and others seem to influence the procurement selection requirements, etc.

### **3 RESEARCH METHODOLOGY**

The study is a descriptive study survey, with the population of study comprising of all the persons and organizations that have the capacity, experience and responsibilities to carry out procurement in construction projects. For the purpose of the unique nature of the research, the population has been delimited to the workforce of construction contracting firms, namely Arab Contractors Imo State, Marcon Engineering Ltd Imo State and Gosh Projects Imo State; and construction consulting firms- Network Projects Imo State, Keliyke Imo State all in South Eastern part of Nigeria. A sample size of 200 was randomly selected, which was divided among the among the selected firms of study, and which cut across construction professionals such as Architects, Quantity Surveyors, Building Technologists, Civil/Structural Engineers, Electrical Engineers, Mechanical Engineers, Project Managers etc. The research being a descriptive study involved the use of structured questionnaires delivered to the various respondents. There was instrument mortality of ten (22) of the questionnaires, bringing the total of both the respondents and copies to 178. The sampling technique adopted in this work is that of the probabilistic simple sampling technique which gives every respondent equal opportunity to express opinion and ensures reliability of information obtained. The questionnaire used for the study was designed to get information from all cadre of the workforce.

Analytical tool used for the analysis was simple percentage for the category of demography of respondents, descriptive statistics for the evaluation of effects and linear regression analysis comprising F-test and ANOVA for the investigation of factors. In other to ensure error free computation, a statistical software package SPSS was employed.

In the regression analysis, the model describing the relationship between dependent variables  $y$  and a set of independent variables  $X_1, X_2, \dots, X_k$  can be expressed as:

$$Y = b_0 + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + e \dots\dots\dots$$

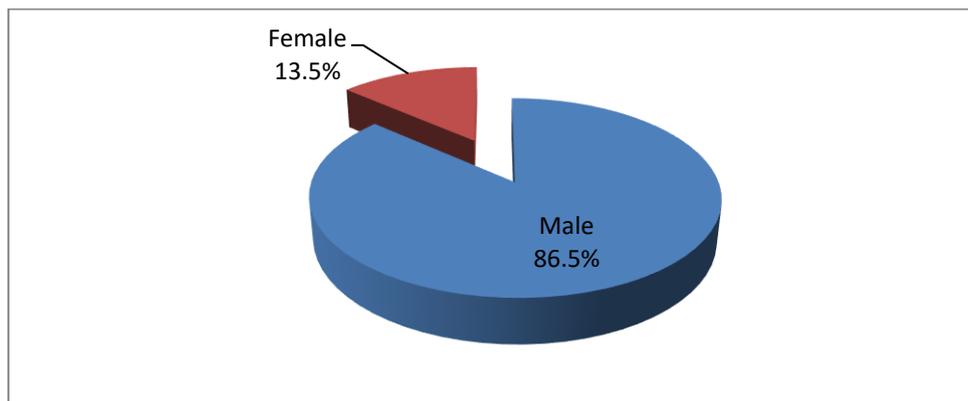
## 4. DATA ANALYSIS AND RESULT DISCUSSION

### 4.1 Socio-Demographic Characteristic of the Respondents

**Table 1 Sex of the Respondents**

CHARACTERISTIC	FREQUENCY	PERCENTAGE (%)
Male	154	86.5
Female	24	13.5
Total	178	100

Source: Field data, 2016



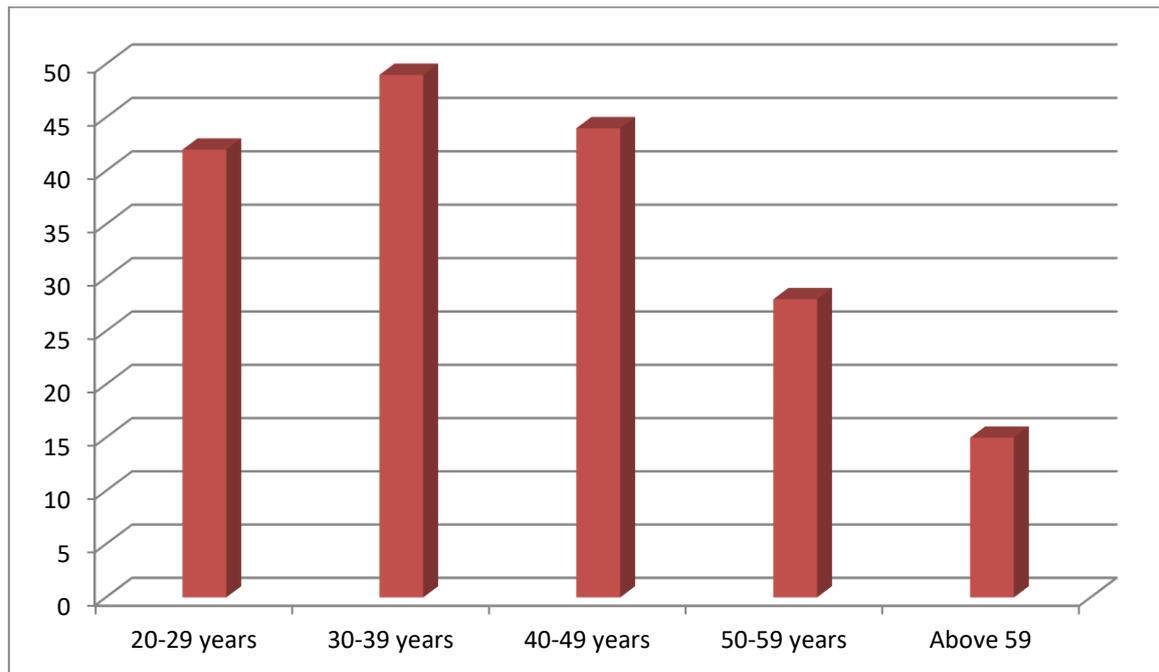
The sex of the respondents shows that 86.5% of the respondents are male while 13.5% of the respondents are female. This shows that the majority of the respondents are male during the survey, this also goes a long way to prove that fact that the male sex are the dominant sex in the Nigeria construction industry.

**Table 2 Age group of the Respondents**

AGE GROUP	FREQUENCY	PERCENTAGE (%)
20—29 years	42	23.5
30—39 years	49	27.5
40—49 years	44	24.7
50—59 years	28	15.7

Above 59	15	8.6
<b>TOTAL</b>	<b>178</b>	<b>100</b>

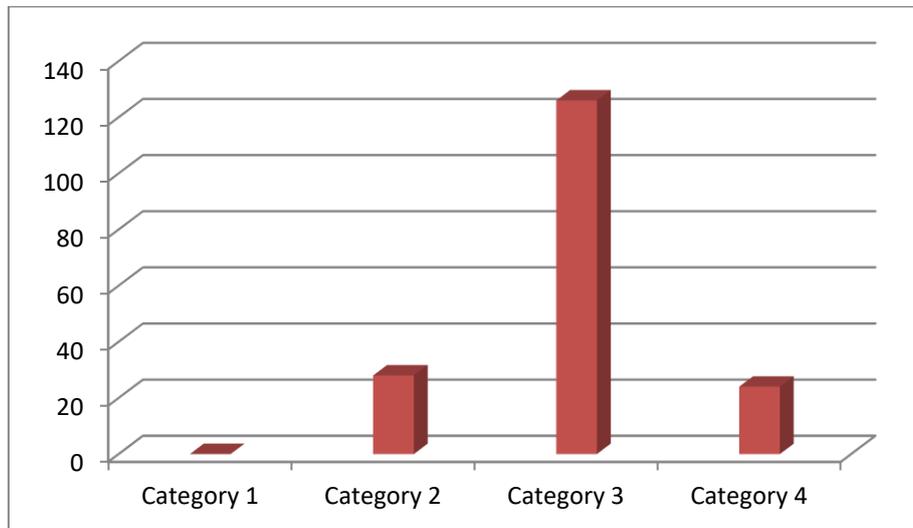
Source: Field data, 2016.



**Table 3 Educational background of the Respondents**

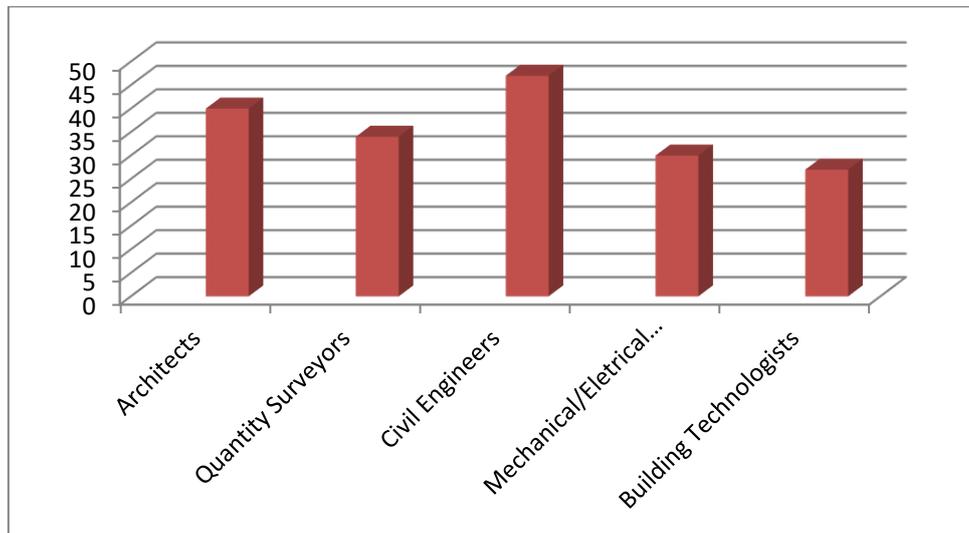
QUALIFICATION	FREQUENCY	PERCENTAGE (%)
SSCE	-	0
OND/NCE	28	15.7
HND/B.sc	126	70.8
M.sc/PhD	24	13.5
<b>TOTAL</b>	<b>178</b>	<b>100.0</b>

Source: Field data, 2016.



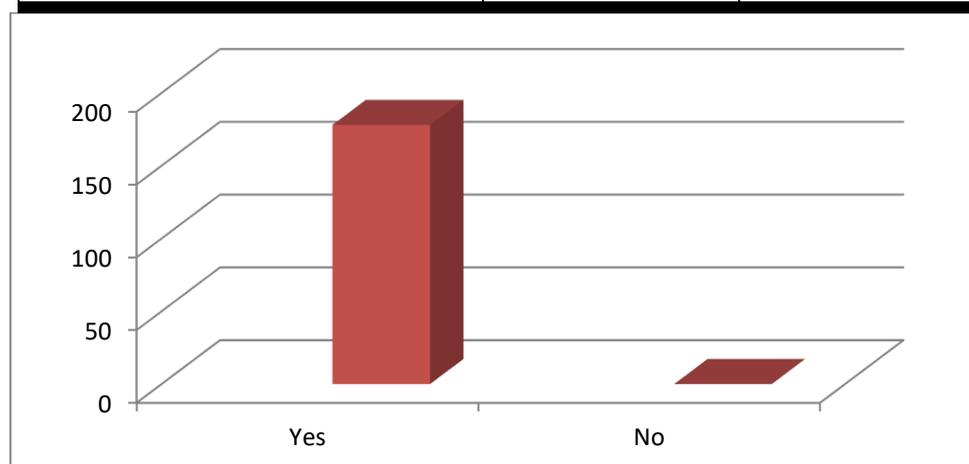
**Table 4 Profession of Respondents**

PROFESSION	FREQUENCY	PERCENTAGE (%)
Architects	40	22.5
Quantity Surveyors	34	19.1
Civil Engineers	47	26.4
Mechanical/Electrical Engineers	30	16.8
Building Technologists	27	15.2
<b>TOTAL</b>	<b>178</b>	<b>100</b>



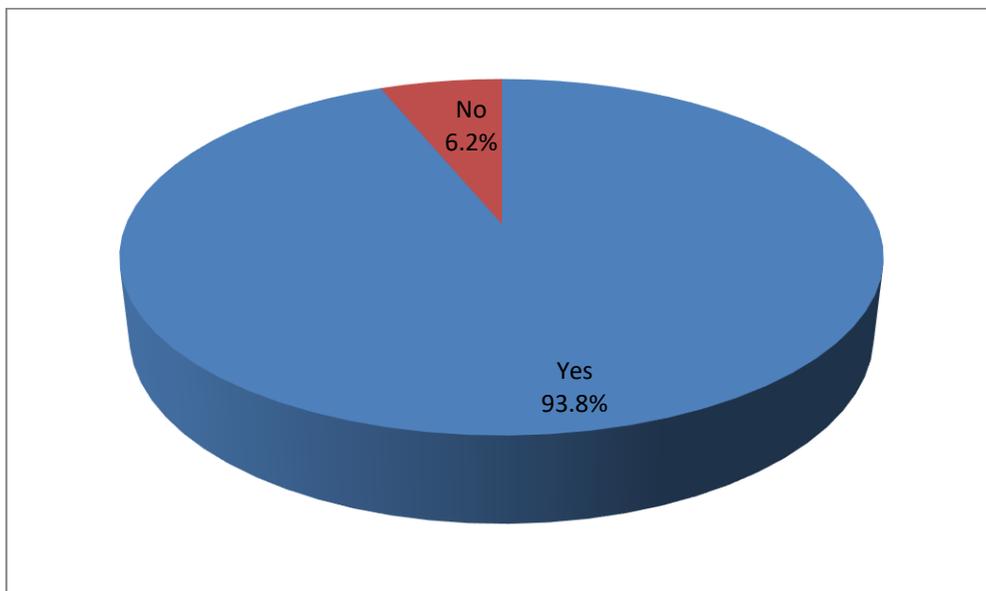
**Table 5 Knowledge of Project Management and its Practice**

KNOWLEDG OF PM	FREQUENCY	PERCENTAGE (%)
Yes	178	100
No	-	0
<b>TOTAL</b>	<b>178</b>	<b>100</b>



**Table 6 Participation in Construction Procurement Process**

<b>PARTICIPATION</b>	<b>FREQUENCY</b>	<b>PERCENTAGE (%)</b>
Yes	167	93.8
No	11	6.2
<b>TOTAL</b>	<b>178</b>	<b>100</b>



#### 4.1.1 Effect of Project Management Process on Construction Project Procurement

**Table 7 Descriptive Statistics for Effect of Project Management on Construction Procurement**

	N	Minimum	Maximum	Mean	Std. Deviation
Efficient Bid Evaluation	178	2.00	5.00	4.1629	1.15047
Timely Bid Invitation	178	3.00	5.00	3.9831	.32720
Effective Procurement Method	178	1.00	5.00	3.5281	1.28520
Quality Performance Evaluation	178	1.00	5.00	3.7640	1.41838
Efficient Design Stage	178	2.00	5.00	4.0787	.97105
Effective Compensation Forms and Plans	178	1.00	5.00	3.3820	1.15964
Proper Subcontractor Selection	178	1.00	5.00	3.8820	1.11619
Valid N (list wise)	178				

Table 7 Clearly shows that project management process affects various construction procurement areas. The results shows that PM process positively affects more in efficient bid evaluation (which has mean value of 4.1629), followed by efficient design stage (mean value of 4.0787), timely bid invitation (3.9831), proper subcontractor selection (3.8820), quality performance evaluation (3.7640), effective procurement method (3.5281) and effective compensation forms and plans (3.3820).

#### 4.1.2 Project Management Process that Integrates with Construction Project Procurement

**Table 8 Project Management Process that Integrates with Construction Project Procurement**

PM Process	Frequency	Percentage
<b>Initiation/Definition of Procurement</b>		
Yes	172	96.6
No	-	0
Neutral	6	3.4
<b>Planning/Selections and Agreement</b>		
Yes	178	100
No	-	0
Neutral	-	0
<b>Execution/Administer Procurement</b>		
Yes	170	95.5
No	-	
Neutral	8	4.5
<b>Control/Assess Procurement Performance</b>		
Yes	174	97.8
No	2	1.1
Neutral	2	1.1
<b>Close Out/Close Procurement</b>		
Yes	178	100
No	-	0
Neutral	-	0

Table 8 shows the integration of the project management process and construction project procurement process. It is obvious that the duo of Planning/Selections and Agreement and Close Out/Close Procurement reflects where there is perfection integration between project management process and construction project procurement. Then coming after the two in their order, are

Control/Assess Procurement Performance, Initiation/Definition of Procurement and Execution/Administer Procurement.

Project management factors that affects the Construction Project Procurement in Nigeria.

### 4.1.3 To rank the project management factors influencing the Construction Project Procurement in Nigeria.

#### 4.4.1 Regression

Table 9 shows that the  $R^2$  is 0.888. This means that 88.8% of the used project management factors account for successful construction project procurement in Nigeria. The relationship model is a very reliable one. The unaccounted factors not covered are 11.2%. Further research into identifying such factors can improve the value of  $R^2$ . This however, does not affect the integrity of our findings.

**Table 9 Model Summary**

Model	R	R square	Adjusted R Square	Std. Error of the Estimate
1	.942 <sup>a</sup>	.888	.878	1.52621

Source: Researchers' Computation (SPSS version 16)

**Table 10 ANOVA<sup>b</sup>**

Model	Sum of Squares	Df	Mean square	F	Sig.
1 Regression	827.661	5	206.915	88.831	.000 <sup>a</sup>
Residual	104.819	45	2.329		
Total	932.480	49			

Source: Researchers' Computation (SPSS version 16)

Table 10 presents the ANOVA report on the general significance of the relationship model. As F -significant of 0.000 is less than 0.05 level of significant, the model is significant. Thus, the combination of the independent variables X1, X2, X3 X4 and X5 significantly predicts the dependent variable Y.

#### 4.1.4 To rank the project management factors influencing the Construction Project Procurement in Nigeria.

**Table 11 Ranking of the Factors**

Model	Unstandardized Coefficients	Standardized Coefficients	T		
	B	Std. Error	Beta	T	Sig
1 (Constant)	17.102	2.854		8.937	.000
X <sub>1</sub> Efficient Project Management Process	.292	.086	.391	4.376	.000
X <sub>2</sub> Project Time Management	.342	.110	.320	3.295	.003
X <sub>3</sub> Quality of Project Management Skills	.321	.114	.251	2.815	.007
X <sub>4</sub> Budget Monitoring and Control	.364	.091	.330	4.013	.001
X <sub>5</sub> Efficient Meeting of Client’s Objectives	.359	.094	.328	3.589	.002

Source: Researchers’ Computation (SPSS version 16)

The ranking of the factors is based on the standardized beta coefficients, which shows the actual level of impact or contribution of independent variables to any change in the dependent variable.

The ranking is as follows:

- 1st = X<sub>1</sub>: Efficient Project Management Process
- 2nd = X<sub>4</sub>: Budget Monitoring and Control
- 3rd = X<sub>5</sub>: Efficient Meeting of Client’s Objectives
- 4th = X<sub>2</sub>: Project Time Management
- 5th = X<sub>3</sub>: Quality of Project Management Skills

In summary, efficient Project Management Process is considered as the most impacting project management factor for successful implementation of construction project procurement in Nigeria. Closely, following is the need for budget monitoring and control. Efficient meeting of client’s objective was considered next while the two trailing behind were project time management and quality of project management skills.

Furthermore, a careful study from the analysis showed that all the project management factors have individual significant impact on successful construction project procurement. This reflected thus in the individual sig figures, in which X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub>, X<sub>4</sub> and X<sub>5</sub> are all below 0.05 level of significance.

## **4.2 Test of Hypothesis**

### **Test of First Hypothesis**

Ho1: There is no significant relationship between project management process and procurement process.

#### **Decision**

Since the sig value (p-value) show significant change of 0.000 which is lesser than 0.05, we reject Ho1 and accept Ha1 which states that there is significant relationship between project management process and procurement process

### **Test of Second Hypothesis**

Ho2: The quality of project management skills by procurement professionals does not influence the quality of project procurement in construction industry.

#### **Decision**

Since the sig value (p-value) show significant change of 0.007 which is lesser than 0.05, we reject Ho1 and accept Ha1 which states that the quality of project management skills by procurement professionals influence the quality of project procurement in construction industry.

### **Test of Third Hypothesis**

Ho3: There is no significant difference between lack of project time management and procurement time overrun.

#### **Decision**

Since the sig value (p-value) show significant change of 0.003 which is lesser than 0.05, we reject Ho1 and accept Ha1 which states that there is significant difference between lack of project time management and procurement time overrun.

## **4.3 Results Discussion**

The research explored the role project management plays in successful construction project procurement in Nigeria. The results arrived at depicted the following project management factors influencing construction project procurement in order of ranking:

- X1: Efficient Project Management Process
- X4: Budget Monitoring and Control
- X5: Efficient Meeting of Client's Objectives
- X2: Project Time Management
- X3: Quality of Project Management Skills

The ranking is reflective of the fact that in the construction procurement industry in Nigeria, there is a strong sync between project management process and construction procurement process; furthermore, no construction project procurement will be successful without passing through the project life cycle, which is the project management process. In the construction procurement industry, budget monitoring and control is sacrosanct to efficient procurement cost management and delivery; this makes it necessary that earned value project management system of cost management is non-negotiable for procurement cost control.

Furthermore, the study shows that project management affects construction project procurement in various ways: efficient bid Evaluation, Timely Bid Invitation, effective procurement method, quality performance evaluation, efficient design stage, effective compensation forms and plans, proper subcontractor selection.

## **5. CONCLUSION**

### **5.1 Conclusion**

This study analyzed the role project management plays in successful construction project procurement in Nigeria.

Thus, in view of this, the following conclusions were made;

- 1) There is significant relationship between project management process and procurement process.
- 2) The quality of project management skills by procurement professionals influences the quality of project procurement in construction industry.
- 3) There is significant difference between lack of project time management and procurement time overrun.
- 4) That there is perfect integration between Project Planning and Selections and Agreement, Project Close Out and Close of Procurement.
- 5) That Project Management process positively affects more in efficient bid evaluation, followed by efficient design stage, timely bid invitation, proper subcontractor selection , quality performance evaluation , effective procurement method and effective compensation forms and plans.

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