Contractors' Performance Evaluation and Improvement Measures during the Execution of Public Building Projects in southeast Nigeria

By

[1]Ezeh Christian Chinedu, [2]Okolie Kelvin C, [3]Nkeleme Emmanuel I, [4]Okereke Godson, [5]Chukwudi Stanley Ozoh

[1]Department of building
Imo State University
ezekristian@gmail.com

[2]Department of Building,
Nnamdi Azikiwe University Awka
Kc.okolie@unizik.edu.ng

[3&4]Department of Building,
Federal University of Technology Owerri
Bishopeio@Yahoo.Com & godson.okereke@futo.edu.ng

[5]Department Of Architecture,
Federal University of Technology Owerri
Chukwudi.ozoh@futo.edu.ng

IJSER

Abstract
In Nigeria, the performance of Contractors and the Construction Industry is generally perceived as very poor and some of the reasons are traced to the fact that there is often no intermittent evaluation of contractors during project execution. Thus, this paper assessed contractor performance evaluation during the execution of public building projects and also measures to improve contractor performance using Imo state as a case study. It was pursued, using literature review and field survey entailing the use of a well-structured questionnaire. A total of three hundred and eighty-four (384) questionnaires were distributed with three hundred and fifty (350) returned adequately filled giving a response rate of 91.0% The responses were analyzed using the SPSS software version 25. The result revealed among others; the criteria for measuring Contractors' performance at the end of any public building construction project among others as: 'User expectation and satisfaction' 'Client Satisfaction'; 'Health and Safety and 'minimization of dispute occurrence'. Also, the result revealed that Contractors' performance in the execution of public building projects in the study area is significantly low. The study also suggests as a measure of improving contractor performance, that; the contract should be checked at intervals based on

the performance indicators identified such as Signing of lawful agreement with client'; 'Contractors avoidance or circumvent strike pay obligations'; 'Sponsor and 'Ability to resolve a dispute in accordance to the procedure.

Key Words: Contractor performance, Contractors Improvement, Contractor Stakeholders

1.0 Introduction

One key feature of the Construction Industry is the use of a contract system involving the employment of Contractors in projects production processes, especially in the public sector. This is due to the peculiarity of the industry's production processes and products. The contract system is particularly very necessary in the execution of building projects in the Construction Industry due to the size and complexity of most building projects. Such projects would otherwise be extremely difficult to be directly coordinated and produced to a successful, logical conclusion by project owners who, in most cases, may not possess the requisite expertise. Constraints such as lack of technical and managerial competence, time, staff, and cash flow requirements in project execution also make the contract system and use of Contractors indispensable in the construction industry (Mbua and Sarisar, 2013).

Despite the tremendous contributions of contractors and the Construction Industry to the growth and development of nations, their success stories are diminished by their global and local gloomy pictures. In the United States of America for instance, construction productivity remains one of the least understood factors in the American economy and the bureau of labor statistics maintains productivity indices for all significant sectors of the economy except the construction sector due to lack of suitable data (CCIS, 2006).

In Nigeria, the performance of Contractors and the Construction Industry is generally perceived as very poor. According to Mbamali (2009), construction contracting in Nigeria witnessed an upsurge during the oil boom of the 1970s and up to the end of the Second Republic in 1983. Unfortunately, the period also witnessed an unprecedented level of degeneration of standards in the project delivery process of construction. Projects were poorly conceived, carelessly planned, and shabbily executed. Construction contracting became an all-comers affair and the result was unreasonably high time and cost overruns, low-quality projects, and widespread abandonments.

The Second Republic era in Nigeria equally witnessed another era of poor projects delivery in the Nigerian Construction Industry due to high level corruption and manipulations in the contract business characterized by such jargons as "contract kickback", contract inflation, contract duplication, ghost contractor, portfolio contractor, among others, especially in the public sector. These lead to the abysmal performance of contractors employed in the execution of public building projects in the country.

As a result of the poor performance of Contractors in the execution of projects in the Nigerian Construction Industry, the Construction Industry is the most misunderstood sector in the Nigerian economy and is very lowly rated in the construction performance index (CPI) of African Countries. According to Usman and Alaezi (2016), the industry accounts for only about 5% of GDP in Nigerians as compared with South African (19%), Ghana (8%), and Mexico (17.7%). Obiegbu (1992), noted that the construction sector in Nigeria holds the record for lowest profits of any manufacturing industry in the country and usually top the list in the bankruptcy league.

Ohiomah and Windapo (2016), also stated that the production process of the Construction Industry in Nigeria is now characterized by widespread incidence of building collapses, use of inferior

quality materials and workmanship, rampant cases of project abandonment, high t1ime and cost overruns, environmental degradation and high rate of site accident leading to permanent disability or death. This raises a fundamental question on the productivity, integrity, managerial and professional competence of Contractors employed in the execution of projects in the Nigerian Construction Industry. Against this scenario, Dada (2016) called for studies to improve the performance of Contractors in the Nigeria construction industry

The urgent remedy is therefore needed to enhance the performance of Building Contractors and the Construction Industry in the study area. According to Koskela (2000), the failures and problems of the construction industry globally are due to the lack of application of project management methods in the industry's project procurement approach which mostly emphasizes the use of constant and contractual as well as other factors associated with the nature and character of construction as complex and unpredictable industry. Thus this paper sought to identify the measure of evaluation of the contractors' performance during the execution of the public building construction process as well as measures that can be adopted to improve a contractor's performance of the construction

2.0 Literature Review

Contractor

A "contractor" is any person who is engaged, other than as an employee, by another to do work for gain or reward. They may be a self-employed person, corporate entity, or a person engaged on some other basis than as an employee. In other words, a contractor is a person or a company that seeks to do business by obtaining contracts and carrying them out. Being a contractor is similar to being a business owner – you negotiate your deals, work for yourself, have your clientele, and are rewarded on your own merits. A construction contractor offers a particular suite of skills that he can perform for clients on a contractual basis. As a contractor, you will likely be paid more for work than you would be as a worker because you have put in the effort of finding the customer yourself. Therefore, any profits from contract work belong to the contractor.

Performance Measures and Indicators

A *Performance Measure* is a metric that is used for quantifying the efficiency and effectiveness of action (Sousa, Aspinall, and Rodrigues, 2006). There are short-term metrics and short-term measures which have to be continually calculated and reviewed (Zairi, 2008). Performance measures may be described as short-term measures that may be calculated or reviewed to indicate performance. NIST (2014), does not distinguish between "measures and indicators" describing both as numerical information used to quantify the input, output, and performance dimensions of processes, products, programs, projects, services, and the overall outcomes of an organization.

Performance Measurement in Construction

Cheng et al. (2009) developed a model for the construction management process reengineering performance measurement process. The model is based on four main principles. These principles include the application of business process reengineering philosophy, process operation, time, and customer satisfaction. These principles are used as evaluation indices for efficiency and

effectiveness. The developed model uses queuing theory to strike an optimal balance between process execution demand and manpower capacity by calculating process operation time. They argued that the construction industry can benefit significantly from Business Process re-engineering, BPR, and design by adopting the proposed model. Hammer (1990) defined BPR as a process that addresses basic issues related to the reengineering process in terms of costs, quality, services, and speeds. Overall project performance rating provides a quantitative indicator that can be used to evaluate contractor performance. Minchin and Smith (2005) calculated a contractor factor using the following formula:

$$CF = \frac{\sum PPF}{N} \quad \text{..... Equ. 1}$$

Where:

CF : Contractor Factor

PPF : Project Performance Factor

N : Number of projects completed by the contractor during the rating period

PPF can be calculated using:

$$PPF = 0.2(PPF_d) + 0.8((PPF_q) \quad \text{..... Equ. 2}$$

Where:

PPF_q : Project Performance Factor from the questionnaire

$$PPF_q = 0.30(Project\ Personnel) + 0.20(Project\ Performance) + 0.20(Schedule\ Adherence) + 0.20(Contractor\ Organisation) + 0.10(Plant\ and\ Equipment)$$

PPF_d : Project Performance Factor derived from the data

$$WCF = \frac{\sum PPF \times PV}{\sum PV} \quad \text{..... Equ. 3}$$

Where; WCF: Weighted CF, PV: Individual Project Value

Performance Measurement-Lessons from Other Industries

Takim et al. (2002) argued that the construction industry generally underperforms compared with other sectors. It is important to benefit from experience in project performance gained in other industries. Construction project performance evaluation is relatively new compared with other industries such as the aerospace industry. Aerospace industry project performance measurement is one of the important sectors that the construction industry needs to learn from to enhance its experience and expertise. Industry project performance is one of the critical processes in project evaluation. The aerospace project performance is critical for the industry.

IJSER

The other important sector that has experienced performance measurement is the Research and Development (R&D) sector. The Research and Development sector is one of the sectors which has gone through measuring performance processes. Measuring performance has become one of the concerns for R&D managers and executives, (Dooren and Thijs, 2010).

Several techniques and approaches have been developed for measuring and evaluating R&D performances. Several factors have been explored which need to be considered in the performance measurement process including changes in the technological and competitive environment. The current market has become more dynamic and turbulent with a need to meet business customer needs. Current and new entrants, competitors, and business models are changing over a relatively short time (Mohr et al., 2005).

Responsibilities for Construction Measures

The table below articulates the major responsibilities and roles of the construction manager

Table 1 Major Responsibilities and roles of construction manager

Responsibilities for Construction Measures (at the Project Level)		
Project Manager	i.	Typically leads the project team to establish specific project goals
	ii.	Ensure that both customers and corporate objectives are incorporated in the project goals
	iii.	Defines measures to track progress against project goals
	iv.	Establishes work processes for gathering, analyzing, and reporting project measures
	v.	Leads the projects team to identify opportunities for improvement and to implement action plans for positive change based on project measures results
	vi.	Reports project results to both customer and corporate resources
Project engineer (planner/scheduler)	i.	Integrates project measures work processes with the project controls system
	ii.	Collates and summaries construction measures reports and forwards to the project manager
Construction manager	i.	Manages work processes to gather and analyze construction-specific measurement data
	ii.	Identifies construction-specific opportunities for improvement
	iii.	Establishes and implements construction-specific improvement plans
	iv.	Report measures and improvement plan status to the project engineer

Source: Construction Users Roundtable (2005),

The roles of project engineer and project manager were also presented. These roles vary from location to location. Most of these responsibilities are un-realizable in Nigeria as bureaucratic process is lacking in the country due to corruption practices. This is evident in the poor performance of building contractors in discharge of their duties.

IJSER

3.0 Methodology

Research design

This research was pursued through fieldwork. The Fieldwork entails the use of an interview of the head of the department of the agencies directly or indirectly involved in the award of contract and the various contractors among others. The research also adopted the use of a structured questionnaire administered to contractors, Consultants, Contractor/consultant employees, and the statutory inspectors/supervisors to establish their opinion on the contractor's performance evaluation measures and measures of improvement in the execution of public building projects within the study area

Method of Data Collection

The primary data for this survey was collected using a structured questionnaire and an interview, while secondary data was obtained from books, journals, magazines, conference/seminar papers will be utilized. The questionnaires were used for data collection and were administered to various professionals in the construction industry broadly categorized into three as the supervisor, contractor, and consultant respectively.

Population and Sample of the Study

The population for the study are the stakeholders and also construction professionals majorly responsible for public building projects delivery in Nigeria. They include professionals involved in the Nigerian Construction Industry irrespective of the fact that they can belong to any of the following Categories: clients, consultants, and contractors. This categorization was to ensure that all information obtained from the structured questionnaires guarantee a reasonable level of validity to achieve the aim of this research work

IJSER

Sample, Sample size, and techniques

The term 'sample' means a specimen or part of a whole (population) which is drawn to show what the rest is like (Nauom, 2007). The techniques/Strategies for determining sample size according to Glenn (2013) are

i. Using the census for a small population
ii. Using a sample size of a similar study
iii. Using published table
iv. Using a formula to calculate the sample size (e.g. Yaro Yamani Formular or cochraoas formula)

However, Cochran's sample size calculation procedure was employed to determine the appropriate sample size in this study. To do this, Cochran's return sample size formula is first determined using the formula presented in equation 1 (Cochran, 1977)

$$n_o = \frac{(t^2)\,x\,(p)(q)}{(d^2)}$$ ----------Equation 1

Where:

- t = value of selected alpha level usually 0.025 in each tail of a normal distribution obtained as 1.96 (the alpha level of 0.05 indicating that the risk the researcher is willing to take that the true margin of error exceeds the acceptable margin of error is 5%).
- (p)(q) = this is the estimate of variance given as (0.5) (0.5) = 0.25
- d= acceptable margin of error for proportion being estimated given as 0.05 (this is the error level the researcher is willing to expect).

Thus, after calculating the Cochran's return sample size no (see Equation 1), we will employ the Cochran's correction formula to obtain the appropriate or final sample size and the formula is given in equation (1) as:

$$n_o = \frac{(1.96^2)\ x\ (0.5)(0.5)}{(0.05^2)} = 384$$ ----------equation 1

Applying equation, gave a sample of 384 as presented equation 1

Thus, the sample size of the respondents for this study is 384.

Questionnaire Administration

Data were collected with the aid of structured questionnaires which the respondents' were drawn from the twenty-seven local government areas of Imo state. These locations were chosen because of the vast public building construction project going on simultaneously in the state initiated b the state government. The targeted respondents of the questionnaire were the Consultants, contractors, and supervisors of such public building construction because they are in the right position to have adequate information regarding the pre-qualification criteria/guideline used to secure the contracts. A total of 384 self-administered questionnaires were distributed to respondents in the target population, 350 were returned and found appropriate for the analysis.

Method of Analysis and Data Presentation.

In the analysis of data to be obtained in the study, both descriptive and referential data analysis will be adopted. Bar Charts, Pie Charts, Tables, means, percentages, and charts will be used to express the statistical results. Charts like bar and Pie charts will also be used to present results. Suitable statistical tools were adopted in the analysis. The Statistical Package for Social Sciences (SPSS) software was used to analyze the data using descriptive statistics Relative importance index will also be used in the study to assess the results.

Relative importance index. (RII) = $\frac{\sum fx}{\sum f} x \frac{1}{k}$ (2)

Where,
Σfx = is the total weight given to each attribute by the respondents
Σf = is the total number of respondents in the sample
K= is the highest weight on the Likert scale.
The ranking of the items under consideration will base on their RII values. The item with the highest RII value will be ranked first (1) the next (2) and so on. The interpretation of the RII values is achieved when,

RII < 0.60, the item is assessed to have a 1ow rating
0.60 ≥ RII < 0.80, item assessed to have high rating
RII ≥ 0.80 items assessed to have a very high rating

Also using mean for the interpretation their extent of prevalence as either low, moderate, or high based on the following boundaries (level of measurement) developed by Ruikar et al. (2006):

a) a mean rating with value $0.00 < x < 2.50$ is considered "Low"
b) a mean rating with value $2.50 < x < 3.50$ is considered 'Moderate'; and
c) a mean rating with value $3.50 < x < 5.00$ is considered 'High'.

4.0 Data Presentation and Discussion

Information regarding the categories of respondents and other features of the respondents are as presented in Table 2. From the Table, it can be deduced that 24.6% of the respondents were the contractors' employees; 23.8% of the respondents were contractors as well as the same percentage for consultants, however, 21.1% of the respondents were consultant employees with only 6.7% of the respondent that were Statutory inspector/supervisors.

With regards to the working experience of the respondent in the construction industry, a larger percentage of the respondent (43.5%) were within the bracket of 6-10years. This was followed closely by 19.7% of the respondents with the age bracket of 11-15yrs, details of the working experience distribution are given in the Table. The Table further presents the highest qualification distribution of the respondents as MSc (28.3%), BSc (23.3%), HND (21.5%), and Diploma (5.8%|).

In addition to the profile of the respondents, the Table also reveals the professional background of the respondents. From the Table, 24.9% of the respondents were Builders; 18.6% architects; 15.4% town Planners; 14.3% Quantity Surveyors, and 10.3% as estate managers. The respondents also indicated the duration f their involvement in the execution of public building projects in Imo State; and to that effect, 28.9%(6-10yrs), 25.3%(0-5yrs), 24.9%(11yrs-15yrs), and 20.9%(16yrs and above). Other details regarding the respondents' profiles are as indicated in the Table.

Table 2 Respondents Profile

S/N	Variable	Option	Frequency (No)	Percentage (%)
1	category of respondents	a) Contractor	83	23.8
		b) Contractors employee	86	24.6
		c) Consultant	83	23.8
		d) Consultant employee	74	21.1
		e) Statutory/government inspector/supervisors	24	6.7
		Total	**350**	**100**
2	Duration of work in the construction industry	a) 0-5yr	61	17.5
		b) 6-10yrs	152	43.5
		c) 11-15yrs	69	19.7
		d) 16- 20yrs	42	12.1
		e) 20yrs and above	26	7.2

		Total	**350**	**100**
3	highest academic qualification	a) Diploma	20	5.8
		b) HND	75	21.5
		c) Bachelor's Degree	82	23.3
		d) Post Graduate Diploma	74	21.1
		e) Master's Degree	99	28.3
		f) Doctorate Degree	-	-
		Total	**350**	**100**
4	professional background	a) Architecture	65	18.6
		b) Building	87	24.9
		c) Quantity surveying	50	14.3
		d) Town Planning	54	15.4
		e) Estate Management	36	10.3
		f) Engineering	30	8.6
		g) Land Surveying	28	7.9
		Total	**350**	**100**
5	designation in your organization	a) Managing Director/CEO	12	3.4
		b) Project Consultant/Supervisor	56	16.0
		c) Project/Construction Manager	97	27.7
		d) Site manager/engineer	99	28.3
		e) Others	86	24.6
		Total	**350**	**100**
6	Duration of involvement in execution of public building in Imo State?	a) 0-5yrs	89	25.3
		b) 6- 10yrs	101	28.9
		c) 11yrs- 15yrs	87	24.9
		d) 16yrs and above	73	20.9
		Total	**350**	**100**
7	Condition of the Public Building Project used fr the study 1= completed, 2=not completed, 3= on-going project	a) 1	56	16.0
		b) 2	42	12.0
		c) 3	55	15.7
		d) 1&2	34	9.7
		e) 2&3	67	19.1
		f) 1,2 &3	96	27.5
		Total	**350**	**100**

Source: Field Survey, (2019)

Basis of Assessment of Contractors Performance after Engagement/ During Execution

IJSER

The performance indicators of the contractors during the execution of the work was also ranked by the respondents and they were done under the broad classifications of: 'Availability of general document before commencement'; 'Civic/legal Obligations'; 'Freedom of Association with Professional Bodies/labor unions'; 'Grievances/disputes resolution'; and 'Subcontractor management'. The ranking of all the performance indicator criteria under these broad classification is presented in Table 3

Ranking of Contractor Performance Indicator on Availability of General Document before Commencement

From the Table, the respondents ranked 'Signing of lawful agreement with client' (RII=0.85) as the most important criteria in the availability of general document before commence of contract. While compliance to statutory requirements of the contract is second. Details of the ranking of other criteria under this category are as presented in Table 4.6.

Ranking of the Contractors Performance Indicator on Civic/legal Obligations

With regards to the civil/legal obligation performance indicator, the respondent ranked Contractors avoidance or circumvent strike pay obligations '(RII=0.71) was ranked first while 'Contractors entering into an agreement or participating in, or facilitate in sham contracting arrangement' (RII= 0.61) was ranked second. Details of the ranking are as shown in the Table

IJSER

Ranking of the Contractors Performance Indicator on Freedom of Association with Professional Bodies/labor unions

The respondent ranked 'Sponsor and encourage staff for professional training and development (RII=0.94) as the most important in freedom of association with professional bodies contractor performance indicator. Other criteria ranked as performance indicators are: 'Adoption of policies that promote freedom of association' (RII=0.70); and 'lawfully encourage employees to join a union (RII=0.68), were ranked second and third respectively. Details of other ranking of freedom of association performance indicators are as shown in the Table.

Ranking of the Contractors Performance Indicator on Grievances/disputes resolution From Table4.6, it can be seen that the respondents ranked 'Ability to resolve the dispute in accordance to the procedure outlined in the relevant industrial instrument or other workplace agreement' (RII= 0.83) as the highest contractor performance grievance/disputes resolution indicator. This was followed closely by 'Taking reasonable steps to resolve grievances or dispute within a reasonable time limit' (RII= 0.75) and 'Ability to avoid industrial action while dispute settlement procedures are being followed' (RII=0.74) which ranked second and third respectively. Details of the ranking of other performance indicators are as presented in the Table.

Ranking of the Contractors Performance Indicator on Subcontractor management With regards to the contractor's performance on subcontractor management; the respondents ranked Ensure sub-contractors compliance to the overall objective of the project'(RII= 0.73) as the highest performance indicator. Another performance indicator in this category is as represented in the Table.

Table 3: Ranking Of Contractors Performance Indicator during the Execution of the Project

S/No	Contractors Performance Indicator	WEIGHTING/RESPONSE FREQUENCY 1	2	3	4	5	(∑f)	∑fx	MEAN	RII	RANK
A	**Availability of general document before commencement**										
1	The signing of a lawful agreement with a client	-	25	60	67	198	350	1488	4.25	0.85	1ST
2	Compliance to Statutory requirement s	31	84	86	45	104	350	1157	3.31	0.66	2ND
B	**Civic/legal Obligations**										
1	Contractors entering into agreement or participating in, or facilitate in sham contracting arrangement	101	22	100	7	120	350	1073	3.07	0.61	2ND
2	Contractors avoidance or circumvent strike pay obligations	27	67	72	50	134	350	1247	3.56	0.71	1ST
C	**Freedom of Association with Professional Bodies/labor unions**										
1	Adoption of policies that promote freedom of association	50	36	80	57	127	350	1225	3.50	0.70	2ND
2	lawfully encourage employees to join a union	45	55	82	54	114	350	1187	3.39	0.68	3RD
3	Motivate and encourage employees because of their union status	72	78	13	60	127	350	1142	3.26	0.65	4TH
4	Sponsor and encourage staff for professional training and development	-	-	-	100	250	350	1650	4.71	0.94	1ST
5	Safety training and awareness meeting	87	43	37	73	12	350	1016	2.90	0.58	5TH
D	**Grievances/disputes resolution**										
1	Taking reasonable steps to resolve grievances or dispute within a reasonable time limit	45	40	26	87	152	350	1311	3.75	0.75	2ND
2	Ability to resolve dispute at the workplace between appropriate level of management, employees and where applicable, union representatives	50	79	46	48	127	350	1173	3.35	0.67	5TH
3	Ability to resolve the dispute in accordance to the procedure outlined in the relevant industrial instrument or other workplace agreement	-	45	79	101	169	350	1444	4.13	0.83	1ST
4	Ability to avoid industrial action while dispute settlement procedures are being followed	-	69	79	92	110	350	1293	3.69	0.74	3RD
5	The ability for work to continue normally without	-	134	23	50	143	350	1252	3.58	0.72	4TH

IJSER

	being detriment to any of the parties										
6	Taking all reasonable measures to prevent and/or end the unlawful industrial action.	-	99	88	119	44	350	1156	3.30	0.66	6TH
E	**Subcontractor management**										
1	Provision of work friendly environment for sub-contractors	53	117	42	11	127	350	1092	3.12	0.62	2ND
2	Ensure sub-contractors compliance to the overall objective of the project	-	97	55	76	122	350	1273	3.64	0.73	1ST

Source: Field Survey, (2019)
Where: 1- Strongly disagree, 2-Disagree, 3-undeceive, 4- Agree, 5- Strongly Agree

Measures for Improving the Contractors Performance

Table 4 presents the respondents ranking of the measure that can be adopted in improving the performance contractors. From the Table, it can be deduced that the respondents ranked 'Engagement of relevant professionals and craftsmen' (RII=0.85) as the best measure of improving contractors' performance. Other measures ranked in the order of significance are: 'Conformance to standards and specification' (RII=0.82); 'Appropriateness of construction technology' (RII=0.81) and 'Adequate financial capacity' (RII=0.80) which were ranked second, third and fourth respectively. Details of the ranking of other measures of improving contractors' performance areas are presented in the Table.

IJSER

Table 4: Ranking Of the Measures for Improving the Contractors Performance

S/N	Factors that can improve Contractors Performance	Frequency of occurrence 1	2	3	4	5	(∑F)	∑Fx	Mean	RII	Rank
1.	Appropriate Project planning	15	21	89	98	127	350	1351	3.86	0.78	**7TH**
2.	and specification	07	76	49	98	120	350	1298	3.71	0.74	**11TH**
3.	Good Project leadership	20	76	48	89	117	350	1257	3.59	0.72	**14TH**
4.	Good communication	-	90	26	100	134	350	1328	3.79	0.76	**9TH**
5.	Good Stakeholder relationship	-	67	60	41	182	350	1388	3.97	0.79	**6TH**
6.	Proper Accountability	-	32	82	98	138	350	1392	3.98	0.80	**4TH**
7.	Timely documentation/record keeping	32	78	31	87	122	350	1239	3.54	0.71	**16TH**
8.	Analysis of Strength, Weaknesses Opportunities and Threats	56	04	43	123	124	350	1305	3.73	0.74	**11TH**
9.	Good management and administrative system	-	44	88	95	123	350	1347	3.5	0.77	**8TH**

10.	Understanding peoples requirements and needs	12	70	39	105	124	350	1309	3.74	0.75	**10TH**
11.	Good contractors and workers relationship	6	66	97	64	117	350	1270	3.63	0.73	**13TH**
12	Maintenance responsibility of contractors on executed project	40	32	68	127	83	350	1231	3.52	0.70	**17TH**
13	Employee training	56	33	81	80	100	350	1185	3.39	0.68	**18TH**
14	Engagement of relevant professionals and craftsmen	-	22	34	127	167	350	1489	4.25	0.85	**1ST**
15	Regularity of payment by clients	77	61	21	68	123	350	1149	3.28	0.66	**19TH**
16	Minimization of variation orders	10	89	32	102	117	350	1277	3.65	0.72	**14TH**
17	Conformance to standards and specification	4	34	47	102	163	350	1436	4.10	0.82	**2ND**
18	Appropriateness of construction technology	11	37	43	89	170	350	1420	4.06	0.81	**3RD**
19	Adequate payment budgeting and financing	71	107	52	97	43	350	1044	2.98	0.60	**20TH**
20	Adequate financial capacity	-	39	50	129	132	350	1404	4.01	0.80	**4TH**

[

Source: Field Survey, (2019)

Where: 1- Insignificant, 2-barely significant, 3-inconsequential, 4- significant, 5- Highly significant

IJSER

Summary of Findings

On the opinion of the respondents based on the assessment of the contractor during the execution of the project, 'Signing of lawful agreement with client' (RII=0.85) is the most important criteria in the availability of general document before commencing of contract. Similarly, Contractors avoidance or circumvent strike pay obligations '(RII=0.71) was ranked first on civic/legal obligation; while 'Sponsor and encourage staff for professional training and development (RII=0.94) as the most important freedom of association with professional bodies contractor performance indicator. In addition, the study also revealed the Ability to resolve the dispute by the procedure outlined in the relevant industrial instrument or other workplace agreement' (RII= 0.83) as the highest contractor performance grievance/disputes resolution indicator.

In addition, the study revealed the criteria for measuring Contractors' performance at the end of any public building construction project. These criteria arranged in the order of significance are: 'User expectation and satisfaction' (RII=0.84), 'Client Satisfaction' (RII=0.82); 'Health and

Safety (RII=0.77) and 'minimization of dispute occurrence' (RII=0.76). Details of the ranking of these ten criteria are as presented in Table3.

In continuation, the study revealed measures for improving the contractor's performance. Given this, Engagement of relevant professionals and craftsmen' (RII=0.85) as the best measure of improving contractors performance'. This was recommended alongside other measures like; Conformance to standards and specification' (RII=0.82); 'Appropriateness of construction technology' (RII=0.81) and 'Adequate financial capacity' (RII=0.80)' to mention but a few. Details of other viable measures are as presented in Table4.7. It is also important to mention that the twenty measures of improving contractor's performance identified are all viable measures taking into consideration the value of the mean which is closer to 4.0 (significant).

5.0 Conclusion

The study further identified the criteria that are pointers to a good performance of contractors while the project is ongoing and to that effect the study concluded that the following are performance indicators: 'Signing of lawful agreement with client'; 'Contractors avoidance or circumvent strike pay obligations'; 'Sponsor and encourage staff for professional training and development' and Ability to resolve the dispute in accordance to the procedure outlined in the relevant industrial instrument or other workplace agreement.
The criteria for measuring Contractors' performance at the end of any public building construction project among others are: 'User expectation and satisfaction' 'Client Satisfaction'; 'Health and Safety and 'minimization of dispute occurrence'.
Some of the measures for improving the contractor's performance to mention but a few include: 'Engagement of relevant professionals and craftsmen'; 'Conformance to standards and specification'; 'Appropriateness of construction technology' and 'adequate financial capacity.

Recommendation

From the findings of the research, the following recommendations are made for the effective performance of contractors in the delivery of public building construction in Imo State:

1. Contractors should at all phases of the construction be evaluated based on the performance indicators identified at all the phases of construction by the study. This will guide the contractor to inform his/her selection for subsequent projects.
2. The Imo state government should adopt the framework and the CPI equation forth e evaluation of contractors as there is no existing framework guiding contractor selection of assessment.
3. As much as possible, contractors should be enlightened with this framework as a basis of their evaluation as it will make them make more proactive and decisive decisions while preparing to be engaged in the execution of public building projects building.

References

Carl T. Haas, John D. Borcheding, and Richard L. Tucker (1999). Research Report: US construction labor productivity trends. 1920-1998: March 1999. Centre for

construction Industry studies (CCIS) University of Texas. http://www.ce.utexas.edu/org/ccis/pe_publication.htm.

Chan, A.P.C., Scott, D., and Chan, A.P.L. (2004). Factors Affecting the Success of a Construction Project. Journal of Engineering and Management, 130(1), 153–155.

Chartered Institute of Management Accountants (2010). New public sector performance; Making fiscal consolidation smarter. (Unpublished discussion paper)

Constructing Excellence (2009, May). UK Construction Industry KPIs. Retrieved May 16, 2009, from Constructing Excellence Website: www.constructingexcellence.org.

Dada M. (2016), Innovative procurement strategies. Proceedings of the 46th Annual Builders Conference General Meeting 8th-12th August 2016, Benin City, Nigeria, 94-102.

Dooren, W. & Thijs, N. (2010). Paradoxes of Improving Performance Management (system) in public administration. Retrieved from HTTP;//www.eipa.EU

Dooren, W. (2006). Performance measurement in the Flemish public sector; a supply and demand approach. (Unpublished Ph.D. thesis) Catholic University, Leuven

Koskela L. (2000), An exploration, towards a production theory and its application to Construction, (Doctoral Dissertation) retrieved online on 24/2/2011 from Uti Publications 408, Finland, http://www/infrtt,/pdf.

Mbachu, J. (2011) Sources of Contractor‘s Payment Risks and Cash Flow Problems in The New Zealand Construction Industry: Project Team‘s Perceptions of the Risks and Mitigation Measures. Construction Management and Economics, 29 (10), 1027-
Navon, R. (2005). Automated Project Performance Control of Construction Projects, Automation in Construction, 14, 467- 476 1041.

Mbachu, J. (2012). Knowledge and Skills Required for Contractors High Productivity and Performance in Construction Project Delivery: An Exploratory Study of the Upskilling Needs of the New Zealand Contractors. Proceedings of WEBER Conference 2012, Abuja, Nigeria, 859-869.

Mbachu, J. and Nkado, R.N. (2007) Factors Constraining Successful Building Project Implementation in South Africa, Construction Management and Economics, 25 (1), 39-54.

Mbamali I. (2009), Building practice in Nigeria: An overview of challenges of some emerging global trends. Paper presented at the National Conference of Department of Building Technology, Auchi Polytechnic with the theme challenges in building and environmental issues, 27th-29th May.

Mbamali, I and Okotie, A.J. (2012) American International Journal of Contemporary Research vol.2 N04: April 2012, 143-150.

Mbamali, I., Aiyetan,O.A., and Kehinde,J.O. (2004). Building Design for Buildability: An Investigation of the Current Practice in Nigeria. Journal of Building and Environment, 40, 1267-1274

Mbua, P., Sarisar, J. (2013). Challenges in the implementation of performance contracting in Kenya. Public Policy and Administration Research Vol. 3, No. 2. ISSN 2224-5731

Moullin, M. (2004). 8 essentials for performance measurement. International Journal of Health Care Quality Assurance, 17 (3), 110-112. agency. Singapore.

NIST (2014). Baldridge Award Criteria. National Institute for Standards and Technology: www.quality.nist.gov, website accessed December 02, 2014.

Obiegbu M.E. (2005). Due Process and Procurement methods in Construction Industry. Pp 23-47, proceedings of the 35th Annual General Conference of Nigerian Institute of Building held on Binez Hotels Ltd. Aba, 10th -14th August.

Ohiomah M.O. and Windapo O.A. (2016), the contribution of the Construction Industry to economic development in Nigeria- The mediatory Role of Building Control. Proceedings of the 46th Annual Builders Conference General Meeting 8th-12th August 2016, Benin City, Nigeria, 56-66.

Okolie K. C. (2011); Performance Evaluation of Buildings in Educational Institutions: A Case of Universities in South-East Nigeria; Published Ph.D. submitted to Department of Construction Management, School of the Built Environment, Faculty of Engineering, the Built Environment and Information Technology, Nelson Mandela Metropolitan University Port Elizabeth, South Africa.

Sousa, S. D., Aspinall, E. M., & Rodrigues, G. (2006). Performance measures in English small and medium enterprises Benchmarking: An International Journal, 13 (1/2), 120-134.

Takim, R and Akintoye A, (2002), performance indicators for successful construction project performance in Greenwood (Ed). 18th Annual ARCOM conference, 2-4 September 2002. University of Northernmbia Association of Research in Construction Management, vol 2.545-55.

Usman D.N. and Alaezi J. (2016). The Role of Construction small and medium enterprises (SMEs) in economic development. Proceedings of the 46th Annual Builders Conference General Meeting 8th-12th August 2016, Benin City, Nigeria, 47-54.

Zairi, M. (2008). Benchmarking: The best tool for measuring competitiveness. Benchmarking for Quality Management and Technology, 11-24.

IJSER