The Perceived Level of Compliance of Construction Projects with Performance Indicators in Nigerian Construction Industry

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ABSTRACT

The fulfillment of expectation of the client is the sole reason for initiating construction projects. These expectations were set out in forms of targeted goals and objectives under three cardinal points of achieving the product in record time, within the budgeted cost and at the right quality. Therefore, this study examines the extent at which construction projects comply with performance indicators (PPIs) in Nigeria. A quantitative research method that uses both descriptive and survey approach to evaluate the perception of construction team was adopted by the study. Data obtained from 975 questionnaires received with valid response were analysed using descriptive and inferential statistics. The result shows that there is no significant difference in perception of respondents on the extent of compliance of construction projects with PPIs. The four PPIs with most compliance levels are: "Project specifications were met by the time of handover to the client"; "Enhanced client satisfaction"; "Enhanced quality standard" and "Given the problem for which it was developed, the project seems to do the best". The adoption of consultancy services of relevant professionals is adjudged to be responsible for the level of compliance witnessed. It is therefore hoped that effort shall be geared towards sustaining and maintaining this trend as discovered by the findings of this study. The study establishes the performance indicators most complied with among the selected indices set to evaluate construction project performance in Nigeria.

Keywords: Construction projects, project performance indicators, compliance, project delivery, cost, schedule, quality, Nigeria.

INTRODUCTION

Good project delivery is the fulfillment of expectation of the clients and other construction stakeholders. Construction projects are conceived to accomplish definite outcomes, mostly with creation of new facilities, upgrading, refurbishing of existing ones or maintenance for facelift. Construction projects are of different sizes but either small or mega, involves utilisation of resources. Project performance is the ultimate target of every construction project. Chitkara (2005) described performance as the extent of realisation of specific set target based on already defined objectives that serve as basis for project parameters. Each construction project has a definite purpose for which it is conceived and functions to perform upon completion. Thereafter are other objectives of timely completion, within a certain stipulated budget and to a desired quality standard.

These yardsticks with which project completion is often measured is referred to as performance. Project performance is an on-going review of the efficiency and importance of a given project. Project success or performance was defined as achieving the strategic intent of the organisation through completion of the project within the expected time frame, while complying with the requirement of the key stakeholders with respect to safety, quality, environment and legislation (Johan and Piet, 2014). In the opinion of Ujene, Idoro and Odesola (2013), the extent at which the desired goal or objective is accomplished is termed performance. The subject of project success is encapsulated in performance, construction project is said to be successful when the expectations and requirements of all stakeholders are

met which is fulfilling the objective of cost, quality, time, safety, environmental and legislation. This is also called project performance. In construction, because of the numerous participants who contribute towards the achievement of project goals, Soetanto (2002) defines performances in one sense as a participants' (clients, architects or contractors) contribution to the execution of the task required to complete the project. Key performance indicators (KPIs) are all such tools used in measuring both the project and organisational performance. KPIs are defined by Masilamani (2005) as a group of indices or factors through which project performance are measured. While performance management is described as all the processes within a particular system that enhance comprehensive and total performance of the system or organisation (Brown and Armstrong, 1999).

Certain performance measurement indices are peculiar to different locations around the world as revealed in literature. These indices called KPIs vary from region to region and location to location. Among those found peculiar to Nigeria construction industry, how many or rather which of them can be said to enjoy some degree of compliance, or better still, how often does our construction project product comply with these indices and which/how many of them in particular. According to literature, Nigeria is plagued with performance issue (Odediran *et al*., 2012), despite being one of the largest construction industries with healthy and robust appearance in Africa (Adebayo, 2002). However, there are other contributing factors that hinder non-compliance as the case is in other climes. This in mind propels the importance of the study as those performance issues shall be unraveled so the construction stakeholders can re-direct their energy accordingly. Previous researchers (Tunji-Olayeni, Lawal and Amusan, 2012; Oke and Abiola – Falemu, 2009; Idoro and Akande-Subar, 2008; Omoregie and Radford, 2006; Aibinu and Jagboro, 2002) only mentioned the ranges of performance indices where the industry is facing challenges but failed to highlight those enjoying compliance. The effort in the past decades had been to identify performance challenges whereas this study looks at those indices enjoying compliance so they could be strengthened and consolidated. Additionally, these previous researchers were limited in scope to Lagos and environs, expanding the scope to other locations and regions of Nigeria, as this study does, gives credence to the findings and results

Against this background, the aim of this study is to evaluate key performance indicators with a view towards ascertaining the level of progress recorded over time with compliance in Nigeria. The specific objective examines the level of compliance of construction projects with performance indicators in Nigeria. This was achieved using relative agreement index and tested the postulated hypothesis on variation in perception and differences using Kruskal Wallis (H) test. The findings of this study shall be beneficial to the construction industry stakeholders in Nigeria. It shall help to for once look away from the performance problem that has bedeviled the industry and focus on those KPIs with better performance level for strengthening and consolidation.

LITERATURE REVIEW

Major project performance indices

Many researchers have attempted to define and group various indices of measuring performance but over the time referred to them as performance indicators. Different indices such as cost, time, quality, client satisfaction and business satisfaction known as performance indicators are used to assess the performance of construction projects (Cheung, Seung and Cheung; 2004). Meanwhile, Enshassi, Mohamed and Abushaban (2009) asserted that the three main evaluation parameters are time, cost, and quality. Others were recommended by Pinto and Mantel (1990) to include obvious value of the project, measuring process implementation and customers' satisfaction upon completion of the project. An all-encompassing framework based on short-term and long-term objectives is required in assessing project success (Shenhar, Dvir, Levi, and Maltz; 2001). The framework according to Shenhar, Dvir, Levi, and Maltz (2001) includes;

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efficiency (which is completing the project according to budgeted cost and time schedule); customer benefits from the final product; business success; and planning for future (market opportunities). These properties were designed to be time and technological uncertainty dependent. Muller and Turner (2007) posited that, project performance and outcome had been measured widely based on finishing the project within time, cost, and meeting the specifications. Satisfying customer's expectations was subsequently added to that list by Mullaly (2006) while Doolen and Hacker (2003) suggested addition of level of project team satisfaction by working together. Project performance was divided by Dvir, Sadeh and Malach-Pines (2006) into two concepts: project efficiency (which is satisfying the objectives of cost, time, and quality or specifications), and project effectiveness (meeting the requirements of customer satisfaction and project team satisfaction).

Auma (2014) concluded that with regards to KPIs, construction industry can be said to have underperformed relative to other industries. The study of performance indices began to gain much awareness and attention among construction project researchers and professionals when it exerts negative influence on construction projects. Hence, the focus of researchers on cost and time overrun as well as desired quality standard. Completion of project within budgeted cost, time schedule and to expected quality specification will not attract any sanction but rather commendation.

Cost performance

The major albatross of construction project delivery is cost performance. Every construction project is expected to be delivered within the allocated budgetary schedule but oftentimes, paucity or non-availability of fund result in schedule delay and ultimately cost overrun. Avots (1998) defined cost overrun as when the final cost of construction project is higher than the initial estimated cost. Overtimes, cost has shown its usefulness as the principal factor for the success of construction project. Elchaig, Boussabnaine and Ballal (2005) described as qualitative some of the important factors such as construction time being a client priority, planning abilities of contractors, methods of procurement and markets condition with the level of construction activity affecting project costs. Until and unless a project satisfies the cost limitation applied to it, such completed project is not deemed a successful endeavour (Rizwan and Azhar, 2008). Hartley and Okamoto (1997) believed that averagely, the construction project does experience about 33% increase in cost.

Schedule performance

Construction project is not an infinite activity because it has both commencement and delivery date. The major fall-out of delay in cash flow is schedule delay or overrun. Overrun in schedule takes place when the project extends beyond the original time allotted for its completion. Odusami and Olusanya (2000) noted that many research works have established that almost all projects encounter cost or time overrun in the course of their execution. Hanna, Camlic, Peterson and Lee (2004) said that average delay of 51% which leads to cost overrun was experienced yearly. User's Guide (2005) recognise the following factors which change the cost of the construction project over the time: Poor project management; Design changes; Unexpected ground conditions; Inflation; shortages of materials; Change in exchange rates; Inappropriate contractors; Funding problem and Force majure.

Quality Performance

Until recent time, quality has not enjoyed a priority consideration in the life cycle of construction projects compared to factors of cost and schedule. Producer's perspective and customer's perspective with regards to quality are different. To producers, the level of conformance to the described design standards and quality specifications is quality while to the customers; it is satisfaction of expectations and requirements. However, Total Quality Management (TQM) had established basis for success of construction project not only on

anticipated time, budgeted cost and targeted technical expectation but also acceptance by customer. According to Chinchu and Ambili (2017), the ability of a product or service to meet complete customer satisfaction upon the use of such product is termed quality. Quality has been described as the world's oldest documented profession (Collins, 1996). Project quality has been defined in various ways by quality professionals. One of such definition is 'meeting the customer's expectations,' or 'compliance with customer's specification.' The more we attempt to define quality, the more complex it becomes especially when put into actual practice. Ledbetter (1994) defined quality as the conformance to the established requirements which are regarded as the characteristics of product, process or services specified by the contracts. To the user of a product or service, quality is achieved only when there is feeling of satisfaction with the appearance, performances and reliability of the project for a given price range. According to Project Management Institute Guide Book (2004), the success of projects had been measured through timely delivery, on cost and targeted quality parameters. Rose (2005) said, development of quality performance has been from the Dark Age period where the craftsmen were responsible for the quality of item through design, tools, sales and customers' feedback. The success performance based on quality had changed attention from craftsmen to the process. However, in recent time, the emphasis of contemporary theories on quality performance has shifted to understanding of customer requirement (Atkinson, 1999; Rose, 2005). Customer's requirement establishes the performance goal and is one of the measures for quality performance.

Empirical review

Based on very exhaustive research made by Flyvbjerg, Holm and Buhl (2002), on cost overruns in global construction, it was discovered that of every 10 projects, 9 had overruns, overrun to the tune of 50-100% were common and had been constant for the 70 years for which data were available. According to Angelo and Reina (2002), cost overruns are major challenge in both developing and developed counties. Wrong cost estimation method adopted at the initial phase of building projects had been adjudged as one of the reasons for overrun (Ogunsemi and Jagboro,2000). In the opinion of Angelo and Reina (2002), other reasons that are either uncontrollable or to some extents are unmanageable are responsible for cost overruns. These reasons include: Accuracy of original cost estimate; Degree of government regulation and control; Construction completion delays; Number of design changes and Labour related matters such as: availability, skills and increase in fringe benefits. Meanwhile, five reasons were identified by project owners for causing cost overruns, they include: Incomplete drawings; Poor pre-planning process; Escalating cost of materials; Lack of timely decisions; and Excessive change orders (Wakjira, 2011).

Construction project performance is peculiar to developing countries and became worsen by inadequate or limited resources and institutional problems to address the situation (Gyandu – Asiedu, 2009). According to report by Iyer and Jha (2006), India is being confronted with performance deficit of her construction projects to the tune of 40%-time overruns. It is not different in Ghanaian construction industry where various issues of non-release of fund, procedural bottlenecks in payment and contract mal-administration still persist (Gyandu – Asiedu, 2009). Nigeria is reported to have one of the largest construction industries in Africa with vibrant and robust outlook, according to Adebayo (2002) and Odediran Adeyinka, Opatunji, Morakinyo (2012) but plagued with performance issues. These performance problems range from cost overruns, time overruns, poor quality of work, low productivity among other. There are evidences of performance problems in most available literature on construction industry in Nigeria that span over a decade (Tunji-Olayeni, Lawal and Amusan, 2012; Oke and Abiola – Falemu, 2009; Idoro and Akande-Subar, 2008; Omoregie and Radford, 2006; Aibinu and Jagboro, 2002). This attest to the monstrous nature of performance challenges, however, concerted effort is on the increase to curb the trend as more research work are dedicated to it among the players in the industry. Angelo and Reina (2002) had earlier said cost overrun is a critical problem that requires more study so as to ameliorate it in the nearest future. In recent time, one of such research was done by Tunji-Olayeni, Mosaku, Fagbenle, Omuh, and Joshua (2016) to

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evaluate the performance of construction projects in Nigeria. Though, SMEs were used as the case study and concentrated only on Lagos, the outcome are rich and far-fetched. The study employed a case study research design with findings showing that the use of any of the established performance measurement frameworks for evaluating performance is alien to construction firms in the study area. Performance of construction projects are measured mainly by cost, time, quality, customer satisfaction, profitability of the project, labour productivity, safety and team work. Additionally, the use of supply chain management and employee satisfaction that would have improved firm's performance and consequently project performance is abandoned.

Key Performance Indicators (KPIs)

Key Performance Indicators (KPIs) are one of the factors that constitute the project success criteria (Thoor and Ogunlana, 2010). KPIs are helpful to compare the actual and estimated project performances in terms of effectiveness, efficiency and quality of workmanship and product (Cox, Issa, and Aherns, 2003; Thoor and Ogunlana, 2010). KPIs can be used to measure the performance of project operation and usually used in construction project. Moreover, performances measurement can be carried out by establishing KPIs which offer objective criteria to measure project success (Thoor, and Ogunlana, 2010). Traditional project performance measurement can be measured by three factors which are cost, time and project quality. Previous researcher argued that the measure of project success can no longer be restricted to the traditional indicators (Low, and Chuan, 2006). They advocate the expansion of success measurement towards project management success or product success or both. Other research has stated that KPI is useful tool to investigate and manage change in construction project (Low and Chuan, 2006). Thus, KPIs also can be used to measure project management performance. Typical KPIs are schedule and budget compliance, number of scope changes, number of issues and defects, and stakeholder satisfaction.

Table 1. shows that KPIs differ from one country to another. Different market situations, policies and strategies, culture and competitive environment require different measures (Kaplan and Norton, 1993). Therefore, a need exists to develop a set of KPIs that suits the environment in Nigeria.

Table 1. Summary of available previous studies on performance indicators at project level

No. Author and Year	Country	Performance Indicators	No of Ind.
1. Jastaniah (1997)	Saudi Arabia	Client satisfaction; Planning Period; Staff experience; Communication; Safety; Closeness to budget; Profitability; Payment claims	8
2. Egan (1998)	UK	Predictability-time, cost; Construction cost; Construction Time; Productivity; Profitability; Safety; Defects; Client satisfaction	8
3. Department of the Environment, Transport and the Regions (DETR),2000	UK	Time; Cost; Quality; Client satisfaction; Client changes; Business performance; Health and safety	7
4. Pillai, Joshi and Rao (2002)	India	Benefit; Risk; Project status; Decision effectiveness; Production; Cost effectiveness; Customer commitment; Stakeholders; Project management	9
5. Cheung, Suen and Cheung (2004)	China	People; Cost; Time; Quality; Safety; Client satisfaction; Communication; Environment	8

6. Wong (2004)	UK	Staff experience; Resources; Site management; Safety; Contractor experience; Time; Cost; Quality	9
7. Constructing Excellence (2005,2006,2009)	UK	Client satisfaction; Defence; Predictability cost, time; Construction cost, time; Variance cost, time; Contractor satisfaction; Profitability; Productivity; Safety; Social indicators; Environment	11
8. Rankin et al. (2008) and Canadian Construction Innovation Council (CCIC) 2007	Canada	Cost; Time; Quality; Safety; Scope; Innovation; Sustainability; Client satisfaction	9
9. Luu, Kim and Huynh (2008)	Vietnam	Construction cost; Construction time; Customer satisfaction; Quality management; Team performance; Change management; Material Management Safety	7
10. Skibniewski and Ghosh (2009)	USA	Construction cost; Construction time; Predictability time and cost; Defect; Client satisfaction product	5
11. Thoor and Ogunlana (2010)	Thailand	On time; Under budget; Specifications; Efficiently; Effectiveness; Safety; Defects; Stakeholders; Disputes	9
12. Construction Industry Institute (CII) (2011)	USA	Cost; Schedule; Changes; Accident; Rework; Productivity	6

METHODOLOGY

Research Design

The research method for the study was both descriptive and survey approach to evaluate the perception of construction team in examining the extent at which project performance indicators were met.

Population and sample

The act of collecting all items such as people, objects or events for the purpose of consideration in a given problem or situation is termed population (Udofia, 2011). The population comprises all the construction team who are project managers (PM), project team members (PTM; engineers, architects, builders, quantity surveyors etc.) and supervisor (SUP) drawn from FCT (Abuja), Lagos and Rivers. The population from the study area are considered due to the volume of construction activities and high concentration of construction firms being macro-capital cities in Nigeria. Ikediashi and Ogwueleka (2014) in a similar study considered these locations as strategic cities in Nigeria. The population frame was sourced from Federal Inland Revenue Service (FIRS). FIRS was considered over Federation of Construction Industry (FOCI) because it has higher registered construction firms. Other reason for the choice of FIRS is the high response rate desired. FOCI was used by Omopariola *et al*. (2019) in South Africa, though targeted at the same respondents but yielded lesser response rate. The sample system adopted were both stratified and purposive random. The stratified random technique was used due to the heterogeneous nature of the population; hence, it is necessary to stratify before taking the sample. This technique was employed to divide respondents based on location (cities or states) to allow for proportional representation of each location. Purposive sampling enabled the selection of respondents within the construction firms based on the recommendation of project manager(s). The projects considered were majorly buildings, roads, hospitals, hostels and any

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such construction projects worthy of assessment. The sample size of 411 firms gotten from sample frame of 637 firms using Taro Yamane's equation with 3 respondents per firm resulted in 1233 respondents. The study area of FCT (Abuja), Lagos and Rivers have 158 firms, 148 firms and 105 firms respectively as shown in Table2.

Table 2. Sample frame and size

State	Number of firms	Sample
Lagos	235	148
Rivers	142	105
FCT (Abuja)	260	158
Total	637	411

A total number of 975 well structured, cross-sectional questionnaires were received with valid response out of 1233 distributed. The questionnaires contained two sections, section one captured the respondent's characteristics such as sex, educational qualification, stake in the projects, professional affiliations, membership status of professional body (if any), years of experience, state where project is domiciled, project owner type, type of construction and contract type and others. The second parts sought the respondent's opinion on the extent of compliance of projects with selected performance indicators.

Measure

Three different scales of measurement were used for the study: nominal, interval and ordinal scales. The respondents' characteristics in the first section were accessed using both nominal and interval scales while ordinal scale of measurement was used for the second section. Section two was measured on a five point-likert scales of 1-Not at all; 2-Just a little; 3- Moderate; 4-Quite a lot; 5-A great deal. Neutral response category was excluded from the five-point scale used because the respondents possess requisite knowledge and experience about the subject matter under scrutiny (Shiu *et al.* 2009). The respondents were asked to rate the extent of compliance of construction projects already delivered based on this scale.

Variables

In a bid to achieve the objective of the study and provide answer to the research question, a set of variables were extracted from the literature, through a pilot study, those adjudged to be peculiar to Nigeria construction industry (twelve in number) were thus used for the study. They are presented in Table 3.

Table 3. Selected project performance indicators (PPIs) in Nigeria

S/n	Project performance indicators
1	Finish project within the budget
2	Finish project on time
3	Enhanced quality standard
4	Lead to improved project team satisfaction
5	Increase the level of productivity
6	Retain talents with the company
7	Enable competitive advantages to the company
8	Enhance the image of the company
9	Enhance client satisfaction

10	Enable continuous improvement
11	Given the problem for which it was developed, the project seems to do the best
12	Project specifications were met by the time of handover to the target

Data analysis

Data obtained for the study were analysed using basic descriptive and inferential statistics of Statistical Package for Social Science (SPSS) version 17. This enabled descriptive analysis of respondents' demographics characteristics while perceptions and opinions were ranked with relative agreement index (RAI). The relative agreement index of PPIs' rating for each group of respondents (PM, PTM and SUP) was computed and ranked using the mean score obtained from SPSS. Formula for calculating RAI as used by previous researcher on similar studies is as stated in equation (I) and it represents perception of the group.

$RAI = \sum w \; RAI = \sum w \div AN$ (I)

Where w = weighted average given to each factor by the respondents; it ranges from 1 to 5

A = the highest weight (which is 5 for this study)

N = the total number of respondents (975 for this study)

RAI = relative agreement index. (Aibinu and Jagboro, 2002; Cheung, Seung and Cheung, 2004; Iyer and Jha, 2006; Ugwu and Haupt, 2007)

Kruskal Wallis (H) test was conducted to test the hypothesis in determining the significant variations and differences in the perception.

Reliability test

Cronbach Alpha coefficient which is a measure of the inner consistency was adopted to ascertain the inner consistency of the data collected for the study. The reliability test was conducted among representatives of the population in (2) two states that forms part of the study area. In line with definition of Kalyviotis (2013) and already used by Ayopo (2011), reliability test was done twice at intervals of fourteen days, the period reasonable enough to guarantee the stability of results to be determined. A four cut-off points for reliability was given by Hinton *et al.* (2004); excellent reliability (0.90 and above), high reliability (0.70-0.90), moderate reliability (0.50-0.70) and low reliability (0.50 and below). The test instrument with Cronbach's Alpha values between 0.85-0.95 has a high reliability and is consistent internally.

Research hypothesis

Based on the research question and objective, a null hypothesis postulated for the study states thus: there is no *significant* difference in the responses to the extent at which construction projects comply with performance indicators among the respondents (construction team) in the study area. Kruskal Wallis (H) test was employed in testing the hypothesis.

Sample characteristics

Construction firms were identified as the custodian of construction project team through a pilot study. Hence, the structured questionnaire as instrument of data collection was administered on construction team members within the firms operating in the chosen locations. Table 4. shows the firm location cover by the study, the total number of questionnaires distributed, the quantity returned, used for the study, number

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discarded as well as the corresponding percentage returned from each location.

Table 4. Descriptive result of the return rate of questionnaire administered

Firm	Administered		Returned		Used		%	Discarded	
Location	No	%	No	%	No	%	Per location	No	%
Lagos	444	36.1	355	36.1	353	36.2	79.5	2	22.2
Rivers	315	25.5	275	27.9	271	27.8	86	4	44.4
FCT(Abuja)	474	38.4	354	36.0	351	36.0	74.1	3	33.3
Total	1233	100	984	100	975	100		9	100

The questionnaire achieved a distribution return rate of 79.8% (N=1233), essentially due to the incentives given to the research assistants and professional colleagues in these locations. As shown in Table 1, of the total distributed, Lagos has a share of 36%, Rivers and FCT (Abuja) has 25.5% and 38.4% respectively. Few of the returned questionnaires were discarded due to some anomalies noticed. They were either not completely filled or cases of multiple answers to same question and many others. Out of the total number returned ((N=984), only 9 that represent < 1% were discarded. Therefore, a total of 975 questionnaires representing 79.1% of the total distributed and 99.5% of the quantity returned were used for the study.

The characteristics of the respondents whose perception were investigated such as sex, educational qualification, stake in the projects, professional affiliation, membership status and experience are presented on Table 5.

Table 5. Descriptive results of respondents' characteristics

Features	Sub features	%	N
	Male	87.5	836
Sex	Female	12.5	139
	TOTAL	100.0	975
	OND	7.4	62
	HND	32.2	381
	BSc/BTech	24.2	226
Educational qualification	PGD	6.6	66
	MSc/MTech	21.9	186
	Others	7.7	54
	TOTAL	100.0	975
	Project Manager	33.0	325
Stake in the project	Project Team Member (PTM)	33.6	326
	Supervisor (SUP)	33.3	324
	TOTAL	100.0	975
	NIA	15.4	148
	NIOB	21.1	175
Professional affiliation	NSE	36.5	343
	NIQS	15.7	160
	None	11.4	149
	TOTAL	100.0	975

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	Technician	0.7	7
	Licenciate	0.7	7
Membership status	Associate	3.4	33
	Graduate	26.5	259
	Corporate	51.9	506
	Fellow	1.44	14
	None	15.3	149
	TOTAL	100.0	975
	1-5years	1.1	8
	6-10years	10.3	93
Years of experience	11-15years	17.1	224
	16-20years	37.0	346
	Above 20years	34.5	304
	Total	100.0	975
	Nigerian	89.7	879
Nationality	Non-Nigerian	10.3	96
	Total	**100**	**975**
	Small firm (0-49)	131	37.3
Farm size	Medium firm (50-100)	92	26.2
	Large firm (100 and above)	128	36.5
	Total	351	100.0
	Below 10 Million	–	–
	10-20 Million	–	–
Project size	21-50 Million	4	1.1
	51-100 Million	32	9.1
	100-900 Million	122	34.8
	Above 1Billion	193	55.0
	Total	351	100.0
	Building	45.43	443
	Road	26.05	254
Construction type	Hospitals	6.05	59
	Sport complex	1.85	18
	Others	20.62	201
	TOTAL	100.0	**975**

RESULTS

The specific objective examines the level of compliance of construction projects with project performance indicators (PPIs). There are many indices or yardsticks through which performance of construction project could be measured or gauged all around the world. All the available performance indicators fall under the three main category of cost, time and quality. To achieve this, the respondents were asked to indicate the

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extent at which they perceive that the project executed by their firms or organisations meet or achieve the outcome/indicators mentioned. Among many, twelve indices were selected based on excerpts from literature and pilot study, and were captured in the questionnaire for the attention of the respondents. In order to know the extent at which performance indicators were met, the twelve elements contained in the questionnaire were ranked by the respondents using a Likert scale. Ranking was done based on relative agreement index obtained from mean score thrown up by the data analysis output and displayed in Table 6.

Table 6. shows the overall perception of the construction team on the frequencies or extent at which project performance criteria were being met by the projects. A comparative analysis of the RAIs and rankings by each group of respondents enabled this. Also, a complimentary Table 7. shows at a glance the five top ranked PPIs that were perceived to enjoy compliance from construction projects. The overall perception does not differ from any of each group perception. Additionally, the last two elements ranked eleventh and twelfth with RAIs 0.6228 and 0.4716 respectively also share similarity among the respondents. "Retain talents with the company" (RAI=0.6228) possess a reasonable level of compliance since it is > 0.5, the average rank, "Finish project on time" (RAI=0.4716) is a far departure from the norm/trend. As earlier mentioned, this challenge is a recurring decimal in construction industry in Nigeria, regardless of the type of project, the nature of the contract and clients' financial base.

Summarily, according to Table 6., construction project is not doing badly in meeting the performance criteria established to measure it. All the elements mentioned in Table 6. have RAI > 0.6, very adequate and satisfactory, except one. The only grey area to be addressed has been pointed out by the respondent which is schedule delay occasioned by many factors especially paucity of fund.

Table 6. The extent of construction projects meeting the performance indices as expressed by the entire construction team

		Overall			PM			PTM			SUP	
Project Performance Indicators	N	RII	Rank	N	RII	Rank	N	RII	Rank	N	RII	Rank
Project specifications were met by the time of handover to the client	975	0.9206	1st	325	0.9212	1st	326	0.9221	1st	324	0.9185	1st
Enhance client satisfaction	975	0.8841	2nd	325	0.9083	2nd	326	0.8865	2nd	324	0.8574	2nd
Enhanced quality standard	975	0.8666	3rd	325	0.9015	3rd	326	0.8546	3rd	324	0.8438	3rd
Given the problem for which it was developed, the project seems to do the best	975	0.8423	4th	325	0.8505	4th	326	0.8411	4th	324	0.8352	4th
Enhance the image of the company	975	0.6952	5th	325	0.7594	6th	326	0.684	5th	324	0.642	7th
Lead to improved project team satisfaction	975	0.6927	6th	325	0.7711	5th	326	0.6822	7th	324	0.6247	8th
Finish project within the budget	975	0.6913	7th	325	0.7446	8th	326	0.6822	6th	324	0.6469	6th
Enable continuous improvement	975	0.6859	8th	325	0.7231	10th	326	0.6791	8th	324	0.6556	5th

Increase the level of productivity	975	0.6665	9th	325	0.7483	7th	326	0.6503	9th	324	0.6006	9th
Enable competitive advantages to the company	975	0.6519	10th	325	0.7286	9th	326	0.6331	10th	324	0.5938	10th
Retain talents with the company	975	0.6228	11th	325	0.7151	11th	326	0.6061	11th	324	0.5469	11th
Finish project on time	975	0.4716	12th	325	0.4898	12th	326	0.4699	12th	324	0.4549	12th

Table 7. Top five elements of PPIs based on perception of each group of respondents

Rank	Project Manager	Project Team Member	Supervisor
1st	Project specifications were met by the time of handover to the client	Project specifications were met by the time of handover to the client	Project specifications were met by the time of handover to the client
2nd	Enhance client satisfaction	Enhance client satisfaction	Enhance client satisfaction
3rd	Enhanced quality standard	Enhanced quality standard	Enhanced quality standard
4th	Given the problem for which it was developed, the project seems to do the best	Given the problem for which it was developed, the project seems to do the best	Given the problem for which it was developed, the project seems to do the best
5th	Lead to improved project team satisfaction	Enhance the image of the company	Enable continuous improvement

Hypothesis testing

In spite of the compact level of agreement on the extent at which project conforms to performance criteria, little difference in perception still persists especially in terms of ranking.

Therefore, the source of this variation in perception needed to be investigated. To achieve this, Kruskal-Wallis (H) test is employed totest the hypothesis that states:

Ho: There is no significant differences in the responses to the extent at which construction projects comply with performance indicators among the respondents (construction team) in the study area.

The decision rule for testing the hypothesis goes thus, if the P-value is less than (or equal to) at 5% significance level, then the null hypothesis is rejected in favour of alternative (if $P \leq 0.05$, reject Hootherwise, if $P > 0.05$ then accept Ho).

The result is shown in Table 8. According to the table, with p-values greater than 0.05, therefore null hypothesis is accepted and alternative rejected. Accepting or rejecting the outcome of hypothesis testing would have become a concern as the test conducted on individual element produced different p-values, some greater than 0.05 and some lesser.

However, conducting the test by comparing the mean score of all elements as ranked by the respondents (construction team) produced the result shown in Table 8. with p- value of 0.127. Since the p-value is greater than 0.05, the null hypothesis is therefore accepted.

The entire construction team unanimously agreed that there is no significant difference in their responses to the level of compliance of construction projects with performance indicators in the study area.

Table 8. Variation in the response on the extent of construction projects complying with performance indicators

the extt indices.	E Extent of compliance with theperformance		Mean Rank	Decision @ 0.05 Sig. Level
Project manager		12	23.17	
Project team member		12	17.83	
Supervisor		12	14.50	
Chi-Square			4.133	
Degree of Freedom			2	
P-value			0.127	Accept

SUMMARY OF FINDINGS

PPIs serves as yardstick to measure whether the objective of the project upon completion are being met or not. It differs from location to location, few ones relevant to Nigeria from literature based on pilot study were used. The study found that the construction team have similar opinion on the extent of compliance of construction projects with PPIs in Nigeria. This opinion reflected in the high ranking enjoyed by all the elements from the entire construction team. Thoor and Ogunlana (2010) said among the factors for measuring success criteria of construction project are PPIs. Therefore, the findings of this study portend success ratings of construction project in Nigeria. Placing side by side, the opinion of the entire construction team and that of each group of respondents, it is discovered that the first four elements of PPIs do not only have high level of compliance but also have corresponding position based on ranking. The construction team unanimously agreed that "Project specifications were met by the time of handover to the client" with RAI of 0.9206 comes first. Others, "Enhanced client satisfaction"; "Enhanced quality standard" and "Given the problem for which it was developed, the project seems to do the best" with RAIs 0.8841, 0.8666 and 0.8423 respectively comes second, third and fourth. The implication of this is the fact that adequate supervision is given to construction projects in Nigeria. Government, NGOs and individual projects are beginning to embrace the use of consultancy service rendered by construction professionals. Government has taken the lead in this direction while few individuals have followed suit.

Also symbolic is the three least ranked elements, "Enable competitive advantages to the company" (RAI=0.6519); "Retain talents with the company" (RAI=0.6228); and "Finish project on time" (RAI=0.4716) enjoyed similar pattern of position and ranking from overall and each group of respondent basis. Four elements were highly ranked between 0.8 and 0.9 by the construction team, this represents about 33%, seven elements (about 58%) were ranked between 0.65 and 0.69 while one element having about 8% portion was pegged on rank 0.4.

The least ranked element of PPIs which is "Finish project on time" is the bane of construction project in Nigeria. According to Enshassi, Mohamed and Abushaban (2009), the three main evaluation parameters of PPIs are time, cost, and quality. Time and quality are both dependent on cost.

Cost here implies finishing the project within the budgeted cost which at times once being delayed leads to schedule overrun. It is entirely the responsibility of construction clients to guide against schedule overrun (Finish project on time) as most projects regardless of the owner or client suffer the same fate of late release of fund or funding issue.

The opinion of the entire construction team is the same on the frequency of extent of compliance of construction projects with PPIs in Nigeria. Based on the outcome of analysis of Kruskal Wallis (H) test, the entire construction team unanimously agreed that there is no significant difference in their responses to the level of compliance of construction projects with performance indicators in the study area.

CONCLUSION

An insight gained from the study was that there is high level of compliance with chosen performance indicators presented to the respondents in the study area. This is based on the test conducted to validate the research hypothesis that revealed PM, PTM and SUP unanimously agreeing to the level of compliance of construction projects to the PPIs. From the evaluation of the construction teams' perception of the frequency of level of compliance with PPIs, it was found that "Project specifications were met by the time of handover to the client"; "Enhance client satisfaction"; "Enhanced quality standard"; "Given the problem for which it was developed, the project seems to do the best" constitute the four PPIs most frequently complied with in the study area. These attest to the adoption of consultancy services of relevant professionals in construction projects as being solicited and canvassed for by the relevant professional bodies in Nigeria. All construction projects regardless of the sponsor or client requires proper and adequate monitoring and supervision for successful delivery.

There is a congruence of opinions as the entire construction team agreed that construction projects comply greatly with the PPIs. Based on this, the study therefore concludes that sustenance of these level of compliance is imperative to boosting continuous project delivery success. The top rated most frequently complied with PPIs ("Project specifications were met by the time of handover to the client"; "Enhance client satisfaction"; "Enhanced quality standard"; "Given the problem for which it was developed, the project seems to do the best") are to be sustained through adoption of the best global practices of engaging professionals in construction projects at all levels.

RECOMMENDATION

Based on the findings, the following recommendations are thus made:

1. The construction stakeholders are enjoined to strengthen and consolidate on the gains made so far on the level of compliance by focusing on the positives derived from this study rather than concentrating efforts on the challenges plaguing the industry.
2. The research scope should be expanded to cover other locations in other region for generalization of findings.

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