Assessment of Clients' Perception and Satisfaction with Project Quality Delivery in Nigeria

Abstract

Construction projects are embarked upon with multiple but specific objectives to be achieved, one of which is to fulfill the client's needs and meet their expectations. The aim of the study is to evaluate and compare the current and desired level of the satisfaction of clients with the quality of projects delivered. 115 responses were received from construction professionals working in clients' organizations, and the data were collated and analyzed. The findings revealed that clients relate quality to compliance with specification and design standards. The results also showed that factors influencing project quality in the Nigerian construction industry are management commitment, regular inspections, and audits, skilled workforce. It is evident from the analysis that the current level of project quality delivery is quite lower than the desired level, and with wider gaps between the two factors of cost and timeliness. It is recommended that every participant in the construction project team should be conscious that projects must comply with specification and design standards which are significant to clients' perception of quality among others.

Keyword: Clients' Satisfaction, Quality performance, Project Quality Delivery, Construction industry, Nigeria.

1.0 Introduction

The construction industry is made up of several stakeholders (Olawumi, 2016a) and these include the client, consultants (architect, quantity surveyor, structural engineer, service engineer), and the main contractors, sub- contractors, nominated supplier, etc. According to Akingbala (2011), the client is the initiator of any construction project, and he appoints the prime consultant, who traditionally is the architect, who then commissions other consultants. The sole desire of the client is to see the project delivered within a reasonable cost, time and to a specified quality**.** Meanwhile, there is clear recognition that project success must also be evaluated from the perspective of various stakeholders (Paul et al., 2015). Perhaps the most important of these stakeholders is the end user. As a result, some experts have suggested that end-user satisfaction is a critical dimension of project success (Paul et al., 2015).

The construction industry is currently faced with many challenges (Olatunji et al., 2017; Olatunji et al., 2016), and the issue is beyond client's cash flow. They are problems that emanate from the other stakeholders e.g. architects, structural engineers, quantity surveyor, contractor. The problem varies from alterations in designs due to improper planning, which leads to additional cost and even sometimes collapses or defaults on the part of the contractor, which sometimes leads to delay or abandonment of the project and even early deterioration of the building after possession by the client. Olawumi (2016b) outlined some challenges facing quantity surveyors or estimators in the discharge of their professional duties in a project.

The construction industry is a dynamic entity due to the level of uncertainties involved in technologies, budgets and development processes (Chan & Chan, 2004). Moreover, the identification of the appropriate means of construction project delivery has also provided an ongoing debate among researchers as the scope of the projects is quite diverse and their construction involves multiple stages and processes. There are two classes of clients; they are the (i) private (ii) public clients. The private client consists of all private developers, corporate organizations, private property owners, etc.; while the public client is mostly governmental agencies and parastatals. These categories of clients

can be further categorized into three groups of the informed client, semi-informed, and uninformed client. The informed client understands that satisfaction is directly proportional to cost, quality, and time; and can measure or ascertain the accomplishment of the required level of satisfaction.

The semi-informed clients also understand the relationship between cost, quality, and time, however, such clients cannot measure the level of satisfaction. The un-informed client does not even know whether such relationships exists. It is important to note that there are several stakeholders involved in the procurement process. This 'buying center' includes all persons participating in the procurement of the service and consists of the following: decider, influencer, purchaser, gatekeeper, and user. Customer satisfaction is affected by the roles of individual members of the 'buying center' regarding interests and goals, the decision process and structures (Brockmann, 2002).

The significance of customer satisfaction and its use for evaluating the quality from the perspective of the client have been emphasized in extant literature (Barret 2000; Torbica & Stroh, 2001; Maloney, 2002; Yasamis *et al.,* 2002). Quality is a persuasive concern throughout the entire project process, as the performance of each phase in the process will affect the performance of subsequent phases. Marr (2001) and Latham (1994) suggested the consideration of quality as a major criterion in construction procurement systems to enhance the level of competitiveness and facilitate the production of higher quality construction. Nevertheless, quality remains an elusive attribute that has been defined in many ways. Goetsch and Davis (2000) consider quality as a subset of performance, in conjunction with productivity, safety, and timeliness, while others seem to think of it regarding "conformity to established requirements" or "fitness for purpose."

1.1 Knowledge gap and the study's objectives

This study examines customer satisfaction in construction as perceived by two customer groups: public and private customers. The focus is to explore these clients' groups' perceptions of the consultants' and contractors' performance. More so, to measure customer satisfaction in construction, the main subjects must be identified. A client may be defined as the owner of the project and the one that needs the constructed facility. In simple terms, the client is the buyer of the product or service.

Kamara *et al.* (2000) describe the 'client' as a body that incorporates the interests of the buyer of construction services, prospective users, and other stakeholders.

Soetanto et al. (2001) recognized that the satisfactory performance of participants is a prerequisite to maintaining harmonious working relationships. Because the performance of each participant in the construction project coalition is interdependent, other participants should assess their performance. In recent times, the construction industry has witnessed several challenges such as variations, delay, fluctuations, contractor's performance, consultant's competence, etc. Naoum (1995) highlighted separation of design from construction, lack of integration and efficient communication, elevated levels of uncertainty, changing environments and increase in project complexity as major problems combating the construction industry.

More so, Torbica and Stroh (2001) argued that the level of customer satisfaction is evident to stakeholders late in the project when most of the client's budget has already been expended, therefore, making clients' satisfaction a major problem. However, clients' satisfaction in the construction industry became an emerging issue in recent times because of advanced technology that has informed all clients, thus, rarely could one find a semi-informed or un-informed client in the construction industry.

Moreover, the causes of delay in project delivery and cost overruns in Nigerian construction projects were attributed to finance and payment arrangements, poor contract management, and shortages in materials, inaccurate estimation, and overall price fluctuations. If a project is completed late, the delay can cause a variety of financial and operational problems for clients, resulting in the conclusion that the project was not successful (Paul et al., 2015).

Therefore, the parameter for determining the level of clients' satisfaction with quality is not defined, therefore necessitating a study that will identify and assess the parameters for clients' satisfaction with project quality delivery in the construction industry.

1.2 Hypothesis Statement

The following hypotheses are to be tested during the research. H_0- null hypothesis and H_1 and H_2 are the alternative hypotheses.

1. H_0 = There is no difference in clients' perception of quality of project delivered

   H_1 = There are significant differences in clients' perception of quality of project delivered

2. H_0 = There is no difference in clients' perception of satisfaction with project quality

   H_2 = There are significant differences in clients' perception of satisfaction with project quality

2.0 Nigeria Construction Industry: An Overview

The Nigeria construction industry has seen a declining investment over the last three decades (Olatunji et al., 2016; Olawumi et al., 2016; Oluwakiyesi, 2011). This trend is expected to continue as the industry is yet to realize its potential in the midst of massive infrastructure the country possesses. In Nigeria, the construction industry is characterized by small and medium-sized local contractors who in most cases engaged in residential projects for private clients (Dantata, 2008).

A formal definition of a client is given by the Business Dictionary (2011) as the customer of any professional service provider or the principal of any agent or contractor. The client is the one who pays for the goods or services and makes use of the goods (Vennstrom, 2008). In a nutshell, Vennstrom (2008) identified the construction client as a customer. They are grouped into two broad categories namely; public sector clients and private sector clients (Othman, 2011; Kelly & Male, 1993).

The public sector clients are made up of corporations, government parastatals that engage in construction projects (Othman, 2011; Dantata, 2008). However, the private sector clients are made up of commercial, cooperate commercial, corporate industrial and corporate developer who engage in construction projects in Nigeria (Othman, 2011). This group constitutes the clear majority engaging in construction projects within Nigeria (Suresh et al., 2012). Irrespective of the type of client whether public or private and despite the kind of organization; big or small, regular or one-off, clients have their unique requirements and value systems (Dantata, 2008; Vennstrom, 2008).

2.1 Concept of Client Satisfaction and Dissatisfaction

Satisfaction is defined as the result of “things not going wrong” (Feçiková, 2004). Researchers have widely identified it as one of the key challenges facing the construction industry (Torbica & Stroh 2000; Constructech 2001; Chan *et al.* 2003; Kärnä 2004; Constructech, 2005; Dulaimi 2005; Kujala & Ahola 2005). Per Cheng *et al.* (2006), satisfaction is achieved or exceeded if a product or service outcome meets or exceeds the customer’s expectation. Maloney (2002) further explains that satisfaction entails recognizing the customer needs, requirements and devising measures to meet the requirements.

Construction client satisfaction was defined as the measurement of the extent to which a client's expectations for a service or a project overall are met (Soetanto & Proverbs, 2004; Parasuraman *et al.*, 1988; Siu *et al.*, 2001; Samwinga & Proverbs, 2003). Thus, it is essential to distinguish the two components of satisfaction - client expectations and the actual or perceived quality of the service offered. More so, satisfaction should not be considered as a global entity due to the various expectations of clients and the quality of services perceived. A proper measure of satisfaction includes a separate assessment of both client expectations and the quality of service provided.

Kometa et al. (1994) observed that “evidence abounds to suggest that clients are largely misunderstood and dissatisfied with the performance of their consultants and contractors.” Previous studies have identified several factors responsible for client dissatisfaction in the construction industry. For instance, Nkado & Mbachu (2001) attempted to differentiate between objective reality and client’s perceptions of it. Accordingly, they argued that client satisfaction/dissatisfaction is a subjective phenomenon, which may not be based on objective reality (e.g. delivery of the project within time, cost, and quality targets), but on client’s perceptions of the objective reality.

Many authors have emphasized the significance of customer satisfaction and its use for evaluating the quality from the customer's perspective in construction literature (Barret 2000; Torbica & Stroh 2001; Maloney 2002; Yasamis *et al.* 2002). In line with high-level requirements, dissatisfaction is growing among consumers with design and construction, because building projects are widely seen as unpredictable regarding delivery on time, within budget and to the standards of quality expected.

Property occupiers and owners require facilities that will be comfortable to occupy, cost-effective and efficient to run while ensuring added value assets. The construction industry tends to define quality as the ability of products and processes to conform to the established requirements.

Tang *et al.* (2003) highlighted eight key factors for evaluating customer satisfaction: professionalism of service; competitiveness of service; timeliness of service; quality of design; the degree of innovation; completeness of other considerations; availability of support for the client; and, supervision at implementation. Recently, Yang and Peng (2008), in their study on customer requirements for construction project management service highlighted cost, quality, time, communication, amongst other factors as dimensions for evaluating satisfaction.

2.1.1 Factors Determining Clients' Satisfaction with Project Quality

Clients have been increasingly concerned with the overall profitability of projects and the accountability of projects. Cost overruns, in association with project delays, are frequently identified as one of the principal factors leading to the high cost of construction (Charles & Andrew, 1990). To the client, quality may be defined as one of the components that contributes to "value for money" (Flanagan & Tate, 1997).

Previous research has identified several factors that determine client satisfaction. Many of those are associated with service providers' performance /service quality and client strategic decisions, which include: (1) Inability of consultants to accurately determine client requirements and transform into reality (Ahmed & Kangari, 1995). (2) Understanding of the client needs client orientation, communication skills and response to consultants' feedback (Gorse & Emmitt, 2004; Cheng *et al.*, 2005; Dainty *et al*., 2006); (3) Service quality factors and cooperation of service providers (Karna, 2004). Kometa *et al*. (1995) recognized four important clients' needs in the built environment, which are functionality, safety, quality, and completion time.

Maloney (2002) emphasizes the importance of the physical product and service delivery when assessing customer satisfaction in the construction industry. Effective communications between the client and service providers also play a major role in the overall satisfaction of the client (Olatunji et

al., 2016; Tavistock, 1965; Ahmed & Kangari, 1995; Wild, 2004; Dainty *et al.,* 2006). Communication within project-based environments presents unique challenges, and different perspectives highlight the diversity of communication problems facing those working within the project based environments (Dainty *et al.,* 2006).

2.1.2 Definition of Quality

Joubert (2002) revealed that quality to a producer means “conformance to specifications,” while to a customer it means “fitness for use.” Meanwhile, per Juran (1993), quality can be defined regarding conformance to the agreed requirements of the customer and a product or service free of deficiencies. Harris and McCaffer (2001) simply describe quality as meeting the requirements of the customer. In the building construction industry, quality can be defined as meeting the requirements of the designer, constructor, and regulatory agencies as well as the owner (Arditi & Gunaydin 1997). However, Berawi (2006) (in Abdulkarim, 2011) include the legal, aesthetic and functional requirements of a project. According to Bamisile (2004), quality is “the totality of features and characteristics of a product or service that bear on its ability to satisfy the stated needs.” Milakovich (1995) consider quality as a subset of performance, in conjunction with productivity, safety, and timeliness, while others seem to think of it regarding “conformity to established requirements” or “fitness for purpose.”

According to Nzekwe (2010), the following quality requirement must be present in any project; quality of the project is of the desired standard; project design and supply specifications contain sufficient details. Others are excellent client services; effective communication; client actions and interactions; tender assessment of quality, not just price; minimal reworks and defects.

2.1.3 Good Client Services

Service is a crucial factor required by clients. The pressure and demand generated by construction customers or clients for quality and improved service have challenged the industry to become more efficient, devising and integrating means to meet, improve and possibly exceed its customer requirement and satisfaction (Smith *et al*., 2001). Services rendered by an organization, or contractor has a significant impact on client retention. Per Maloney (2002), the services provided by a contractor

to the customer provide an avenue for contractors to enhance their satisfaction strategies to the customers. He further argues that the positive or negative service encounter of the client would result in high or low satisfaction. Moreover, Yasamis *et al.* (2002) state that project owners do expect the provision of quality service from the contractors. However, it is vital that goals and strategies for client service in the construction industry be set such that it incorporates all the project participants, the industry policies, and the participants" satisfaction attributes, indicating that adequate service is an attribute required by all project participants.

Yasamis et al. (2002) in a study on assessing contractors' quality performance stated that quality performance in construction is results oriented, and seeks evidence of quality awareness within the operations and output of a project organization. For example, cost overruns and time delays of construction activities are often used to measure the impact of rework occurring during the process.

2.1.4 Development of Quality Culture in the Construction Industry

Culture is unique to each organization; it is agreed that certain elements commonly define quality culture. There are ten (10) essential element of quality culture which TQM practitioners generally agree should be present in organizations whose culture complements TQM implementation (Ahmed et al, 2005; Haupt & Whiteman, 2004; Rita, 2003; Bubshait, 2000; Ngowi, 2000; Zhang, 2000; Adebanjo & Kehoe; 1999; Dellana & Hauser, 1999; Shammas-Toma et al, 1998; Ahire et al., 1996). This included leadership and top management commitment, customer management, training and education, teamwork, people management and empowerment, supplier partnership, quality planning and strategic, process management, rewards and recognition and effective communication.

4.0 Research Methodology

The Nigerian construction industry has experienced an increased level of infrastructural development for the past eight years. Morenikeji (2006) noted that population is the total of the members constituting the target group defined by the objective of the study. The target population for this study was based on construction professionals who acts on behalf of the client or working in clients' organizations. The population includes the public clients (that is, government's agencies, ministries,

and parastatals) and private clients (banks, physical planning units of tertiary institutions, etc.). Moreover, the objective views of the array of seasoned consultants such as Quantity Surveyors, Architects, Engineers, and Builder, etc. was also of immense benefit to the study.

The sampling technique employed was the census survey where all members of the target population were considered. A well-structured questionnaire survey was used as the data collection instrument and was administered to the clients or their representatives. The preliminary section of the questionnaire collected the background information of the respondent such as their profession, years of working experience and membership of professional bodies and others. The other sections centered on issues relating to this research.

4.1 Data Analysis

The appropriate method of data analysis was employed to process the collated survey data accurately. Per Olatunji et al. (2017) and Ajayi (1990), data analysis could involve the use of multiple analytical techniques to facilitate the ease of communicating the result while at the same time improving its validity. The data were analyzed using percentages, frequency, mean score (MS), and Chi-Square. Two hundred and three (203) questionnaires were distributed, of which one hundred and fifteen (115) questionnaires were duly filled and retrieved (representing 57% response rate). The questionnaire was pretested to ensure that they there are not ambiguous, and adequate to increase the knowledge.

5.0 Result Findings

5.1 Respondents' demographic analysis

This section analyses the personal information of the study's respondents. These include the category of the clients, designation of those surveyed, academics qualification, professional qualification and working experience. Table 1 shows the percentage distribution of clients with the majority (62.6%) of the survey participants' working with public clients, while 20% of the respondents work with private clients or developer, 15.7% are from corporate clients (e.g. banks, etc.). The analysis reveals that

government owns the highest number of executed project in the Nigerian construction industry. Meanwhile, a sizeable number (43.5%) of the respondent held a master's degree, while another 42.6% are bachelor degree holders, 7.8% are higher diploma holders, and 6.1% have other qualifications. With the largest number of respondents possessing a master degree. as their highest academic qualification, a better understanding of the research aim is expected and thus a more reliable response.

Table 1: Category of clients

Clients	Frequency	Percentage (%)
Private clients	23	20.0
Corporate	18	15.7
Public	72	62.6
Others	2	1.7
Total	**115**	**100.0**

More so, the majority of the survey participants (50.4%) have more than 11 years of working experience in the construction industry, while those with less than 5years of experiences constitutes 19.1% of the population. Moreover, based on their professions, we have 35.7% of the respondents being engineers, 33.0% as quantity surveyors, 24.3% as architects and 7% as builders. Meanwhile, two-thirds of the survey respondents are corporate members of the professional bodies, 17% are associate members, 16% as graduate members and about 4% are fellows. The analysis reveals that the respondents are well-informed personnel in the construction industry thus giving a high reliability and credence to the data collected.

5.2 Hypotheses testing

Table 2 shows the result of the hypothesis testing for the "clients' perception of quality of project delivered" using Chi Square. The testing was evaluated at 95% confidence level which resulted in 0.05 significance level. If the significant value is less than 0.05, the null hypothesis will be rejected. However, for the factor "*Be conformance or compliance with specification and design standards*," p-value is less than 0.05. Hence the null hypothesis (H_0) is rejected and the alternate hypothesis (H_1)

which states that "*there are significant differences in clients' perception of quality of project delivered*" is accepted.

Table 2: Clients' perception of quality

Perception of quality	Chi-square			
	χ^2 value	Df	P value	Remark
Meet all customer's expectations or demands	5.527	12	0.786	Accept
Looks good, works good, or company's name on the finished product	5.294	12	0.507	Accept
Meets design or code requirements, minimal call-backs or rework needed	9.602	12	0.651	Accept
Able to guarantee that the finished product will not fail or have problems	10.137	12	0.604	Accept
Be conformance or compliance with specification and design standards	20.273	12	**0.016***	Reject

*Significant at 0.05 level of significance

Table 3 shows the result of the hypothesis testing for the "clients' perception of satisfaction with project quality" using Chi Square. The testing was evaluated at 95% confidence level which resulted in 0.05 significance level. If the significant value is less than 0.05, the null hypothesis will be rejected. Meanwhile, for the factor "a *customer is a function of pre-purchase expectations and post-purchase product or service performance*," the p-value is less than 0.05. Hence the null hypothesis (H_0) is rejected and the alternate hypothesis (H_1) which states that "*there are significant differences in clients' perception of satisfaction with project quality*" is accepted.

Table 3: Clients' perception of satisfaction with quality of construction project

Perception of satisfaction with quality	Chi-square			
	χ^2 value	Df	P value	Remark
A key performance measure and a major determinant of project success	11.403	12	0.495	Accept
A measure of how product and service meet expectation	17.759	12	0.038*	Reject
Customer's fulfillment response and is a judgment that a product or service provided pleasurable levels of fulfillment	8.646	12	0.471	Accept

Fitness for purpose	3.596	12	0.731	Accept
A measure of zero defect on every project	3.557	12	0.938	Accept
A customer is a function of pre-purchase expectations and post-purchase product or service performance	18.055	12	**0.035***	Reject
The quality of a project offers after construction	5.865	12	0.439	Accept
A function of comparison between an individual's perception of an outcome and its expectation for that outcome	8.728	12	0.463	Accept
Clients' needs in the built environment, are functionality, safety, quality, and completion time	12.162	12	0.204	Accept

*Significant at 0.05 level of significance

5.3 Mean Ranking

This section elaborates on the analysis of the mean score (M) and standard deviation (SD) for the range of factors regarding project quality and clients' satisfaction. More so, per Olatunji et al. (2017) and Tsai et al. (2014) when "two or more factors have the same mean score, factors with a smaller standard deviation are assigned higher ranks." However, Olatunji et al. (2017) noted that if the factors have the "same mean and standard deviation" they should have the same rank.

Table 4 shows the mean score and the ranking of the factors influencing project quality.

Table 4: Factors that influence project quality

Factors influencing project quality	Standard deviation	Mean score	Rank
Management commitment	0.456	4.71	1
Regular inspections and audits	0.584	4.64	2
Skilled workforce	0.641	4.48	3
Effective communication between managers and employees	0.550	4.45	4
Regular meetings	0.661	4.34	5
Clearly defined goals and objectives	0.703	4.30	6
Well-defined roles and responsibilities	0.639	4.27	7
Training and education	0.573	4.19	8
Organizational culture	0.711	4.10	9

Incentives for good performance	0.756	4.10	10
Employee involvement	0.580	3.99	11
Review/analysis used to improve performance	0.689	3.96	12
Criteria used in pre-qualification in bidding process	0.677	3.87	13
Subcontractors involvement	0.581	3.46	14
Written quality program or policy	0.638	2.45	15

Table 5 shows the factors determining client's satisfaction with project quality. Durability (M=4.50, SD=0.628), reliability (M=4.46, SD=0.640) and conformance (M=4.43, SD=0.703) are the three most significant factors that determine clients' satisfaction with project quality.

Table 5: Factors determining clients' satisfaction with project quality

Factors determining satisfaction	Standard Deviation	Mean score	Rank
Durability: The amount of use end-users get from the facility before replacement is preferred to continuing repair	0.628	4.50	1
Reliability: The level of confidence with which the end-user may use the facility, to the end of its design life, without failure.	0.640	4.46	2
Conformance: The degree to which construction operations meet the design standards and specifications	0.703	4.43	3
Performance: Basic function of the facility meets the end user's needs and intents	0.652	4.27	4
Understanding: The ability to comprehend the client's needs and Requirements	0.839	4.26	5
Credibility: Honesty; trustworthiness	0.944	4.11	6
Reliability: Ability to perform the promised service dependably and accurately	0.744	4.07	7
Accuracy: The ability to provide the right service the first time with minimum amount of rework	0.630	4.05	8
Aesthetics: The level of satisfaction the end-user experiences with the facility's look, feel, sound, taste, or smell	0.689	3.96	9
Serviceability: Speed, courtesy, competence with which maintenance on facility can be carried out	0.656	3.95	10

Perceived quality: The level of satisfaction the end-user experiences with the facility's image and publicity	0.786	3.84	11
Features: Characteristics that supplement basic functions of the facility	0.640	3.70	12
Timeliness: Completion of the contract on the scheduled date	0.783	3.62	13
Communication: Keeping customers informed in a language they can understand and listening to the client when necessary	0.897	3.34	14
Courtesy: The degree of respect, politeness, friendliness and kindness of the site and other personnel	0.918	3.17	15
Security: Physical, financial and confidentiality	0.887	2.74	16

Table 6 shows the criteria for measuring current level of clients' satisfaction with the quality of the project.

Table 6: Current level of satisfaction of clients with the quality of projects delivered

Criteria for measuring current level	Standard Deviation	Mean Score	RANK
Performance: Basic function of the facility meets the end user's needs and intents	0.862	3.47	1
Features: Characteristics that supplement basic functions of the facility	0.638	3.44	2
Understanding: The ability to comprehend the client's needs and requirements	0.819	3.44	3
Aesthetics: The level of satisfaction the end-user experiences with the facility's look, feel, sound, taste, or smell	0.860	3.30	4
Conformance: The degree to which construction operations meet the design standards and specifications	0.947	3.26	5
Reliability: Ability to perform the promised service dependably and accurately	0.801	3.24	6
perceived quality: The level of satisfaction the end-user experiences with the facility's image and publicity	0.871	3.17	7
Serviceability: Speed, courtesy, competence with which maintenance on facility can be carried out	0.860	3.12	8

Credibility: Honesty; trustworthiness	0.874	3.09	9
Communication: Keeping customers informed in a language they can understand and listening to the customer when necessary	0.821	3.03	10
Accuracy: The ability to provide the right service the first time with minimum amount of rework	0.964	3.02	11
Minimal reworks and defects	0.903	3.00	12
Durability: The amount of use end-users get from the facility before replacement is preferred to continuing repair	1.051	2.90	13
Cost: meeting an agreed cost	1.134	2.73	14
Timeliness: Completion of the contract on the scheduled date	1.291	2.42	15
Security: Physical, financial and confidentiality	0.884	2.60	16

Table 7 shows the criteria for measuring the desired level of clients' satisfaction with the quality of the project.

Table 7: Desired level of satisfaction of clients with the quality of projects delivered

Criteria for measuring the desired level	Standard Deviation	Mean score	RANK
Understanding: The ability to comprehend the client's needs and requirements	0.497	4.77	1
Durability: The amount of use end-users get from the facility before replacement is preferred to continued repair	0.495	4.70	2
Conformance: The degree to which construction operations meet the design standards and specifications	0.562	4.70	3
Reliability: Ability to perform the promised service dependably and accurately	0.484	4.69	4
Performance: Basic function of the facility meets the end user's needs and intents	0.552	4.69	5
Cost: meeting an agreed cost	0.559	4.60	6
perceived quality: The level of satisfaction the end-user experiences with the facility's image and publicity	0.576	4.59	7
Timeliness: Completion of the contract on the scheduled date	0.531	4.57	8

Accuracy: The ability to provide the right service the first time with minimum amount of rework	0.609	4.57	9
Aesthetics: The level of satisfaction the end-user experiences with the facility's look, feel, sound, taste, or smell	0.610	4.56	10
Credibility: Honesty; trustworthiness	0.535	4.54	11
Serviceability: Speed, courtesy, competence with which maintenance on facility can be carried out	0.612	4.52	12
Features: Characteristics that supplement basic functions of the facility	0.568	4.51	13
Communication: Keeping customers informed in a language they can understand and listening to the client when necessary	0.670	4.24	14
Minimal reworks and defects	1.177	4.02	15
Security: Physical, financial and confidentiality	0.568	2.90	16

Table 8 shows the comparison between the criteria for measuring current and desired level of clients' satisfaction with the quality of projects.

Table 8: Current and desired level of satisfaction of clients with the quality of projects state.

Criteria	**Current level Mean score**	**Desired level Mean score**
Performance	3.47	4.69
Features	3.44	4.51
Cost	2.73	4.60
Conformance	3.26	4.70
Durability	2.90	4.70
Serviceability	3.12	4.52
Aesthetics	3.30	4.56
Perceived quality	3.17	4.59
Understanding	3.44	4.77
Timeliness	2.42	4.57
Communication	3.03	4.24
Minimal reworks and defects	2.99	4.02
Reliability	3.24	4.69
Credibility	3.09	4.54
Accuracy	3.02	4.57

Security	2.60	2.90

Based on the variation of their ranking, the “web diagram” shows the gaps that exist between the analyzed criteria for measuring the current and desired level of satisfaction of clients with the quality of projects. Figure 1 shows the result gotten from the analysis of the criteria used for measuring current level and desired level of clients’ satisfaction with the quality of projects delivery in Nigeria.

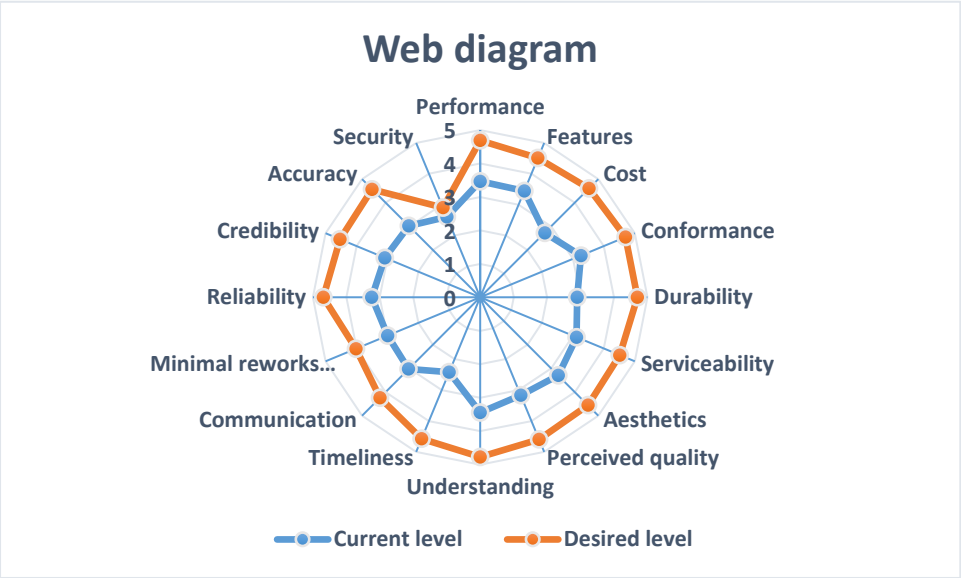

Figure 1: Web Diagram

6.0 Discussion of Findings

This section elaborates on the summary of findings from the analyzed results.

6.1 Clients’ perception of quality

Clients’ perception of quality is a critical phase in the lives of any project. Table 2 shows the assessment of clients’ perception of quality. The results of the findings revealed that there is the difference in clients’ perception of quality with only conformance with specification and design standards the only significant perception of the client on quality which was at 95% confidence by the respondents. Also, factors such as complying with design or code requirements, minimal call-backs or rework needed and able to guarantee that the finished product will not fail or have problems,

therefore, posed no significant different to clients' perception of quality as the results showed (p values > 0.05).

6.2 Clients' perception of satisfaction with quality of construction project

The responses received indicates that satisfaction, even though subjective has a meeting point regardless of the type of client. The results of the findings revealed in Table 3 shows two of the clients' perception of satisfaction has proven to be significant in accordance to the respondents as they relate to clients' perception of satisfaction with the quality of construction project delivery in Nigeria. They include a measure of "how product and service meet expectation" and "a customer is a function of pre-purchase expectations and post-purchase product or service performance." Meanwhile, compliance with specification and design standards as clients' perception of quality must be met before the factors could be achieved. However, this does not mean the rest perceptions of satisfaction with quality as stated in the literature review are not significant, but they are not appropriate to project quality in Nigeria as the results showed (p values ≥ 0.05).

6.3 Factors influencing project quality

The construction phase is a critical phase in the life of any project; it is at this phase that quality of material and components of the structure is determined. Table 4 shows the ranking of fifteen (15) factors influencing construction projects. The key factors influencing project quality are "management commitment" (M=4.71, SD=0.456), "regular inspections and audits" (M=4.64, SD=0.584); "skilled workforce" (M=4.48, SD=0.641) and "effective communication between managers and employees" (M=4.45, SD=0.550). Previous authors (Ahmed et al, 2005; Haupt & Whiteman, 2004; Rita, 2003; Bubshait, 2000; Ngowi, 2000; Zhang, 2000; Adebanjo & Kehoe; 1999; Dellana & Hauser, 1999; Shammas-Toma et al, 1998; Ahire et al., 1996) agreed that these key elements be present in organizations whose culture complements TQM implementation.

However, other factors such as review/analysis used to improve performance, criteria used in pre-qualification in the bidding process, subcontractors' involvement and written quality program or policy are perceived by the clients to be less critical in influencing project quality.

6.4 Factors determining clients' satisfaction with project quality

The analysis of the results (Table 5) shows that the clients attach immense importance to some project satisfaction factors. The respondents highlighted four (4) influential factors that determine clients' satisfaction with project quality and these include: durability (M=4.50, SD=0.628), reliability (M=4.46, SD= 0.640). Other factors are conformance (M=4.43, SD=0.703), performance (M=4.27, SD=0.652) and understanding (M=4.26, SD=0.839). Meanwhile, However, factors such as communication, courtesy, and security with M<3.50 are perceived as less important in determining clients' satisfaction level.

6.5 Current and desired level of satisfaction of clients with the quality of projects delivered.

Table 6 shows the current level of clients' satisfaction with the quality of projects; sixteen criteria were ranked. The three most significant factors in the series are performance (M=4.77, SD=0.497), features (M=3.44, SD=0.638) and understanding (M=3.44, SD=0.819). The least factors are cost, timeliness, and security with M<2.90. Table 7 revealed the ranking of the desired level of clients' satisfaction with the quality of projects delivered in Nigeria. Sixteen points were listed and ranked accordingly. The three most significant factors are understanding (M=4.77, SD=0.497), durability (M=4.70, SD=0.495) and conformance (M=4.70, SD=0.562). The least are communication, minimal reworks and defects, and security with slight significance to the level of clients' satisfaction. The findings reveal that the current level of clients' satisfaction is quite below the desired level of clients' satisfaction with the quality of projects.

Figure 1 shows the analysis via a web/radar diagram depicting the analysis of the criteria used for measuring current level and desired level of clients' satisfaction with the quality of projects delivery. Web diagram was used in pairing the two levels. The figure shows all the paired criteria to be different on the levels which indicate that performance at the current level is quite lower than the desired level of clients' satisfaction with the quality of project delivered which goes for all. However, by comparing the figures, which shows that there are wider gaps on timeliness and cost between the current level and desired level of clients' satisfaction with the quality of project delivered in Nigeria.

7.0 Conclusions

The study carried out an explorative survey of the perceptions and satisfaction of construction clients with project quality delivery in the Nigerian construction industry. The clients in the construction industry relate quality to compliance with specification and design standards. The clients perceived satisfaction with the quality of construction project as a customer is a function of pre-purchase expectations and post-purchase product or service performance and, as a measure of how product and service meet expectation.

Considering the factors influencing project quality in Nigeria construction industry; the research showed that management commitment is the principal factors influencing project quality, followed by regular inspections and audits, skilled workforce, effective communication between managers and employees and regular meetings. However, factors such as criteria used in pre-qualification in the bidding process, subcontractors' involvement and written quality program or policy are perceived as less significant in influencing project quality delivery.

Several factors determining clients' satisfaction with project quality were obtained from the literature review; and from the analysis it was deduced that "durability" is the most determinant factor considered by the clients, followed by "reliability," "conformance," "performance" and "understanding." The key criteria for measuring current level of clients' satisfaction with the quality of projects delivered in Nigeria include "performance," "features" and "understanding."

Therefore, it is evident from the analysis that the current level is quite lower than the desired level and with wider gaps between criteria such as "cost and timeliness." Based on the findings of this research, the following recommendations are proposed. Firstly, every participant in the construction project team should be mindful that projects comply with specification and design standards which are the most significant factor to the clients' perception of quality. Secondly, the top managements of construction firms should be mindful of factors that can contribute to job dissatisfaction and attempt to improve them to achieve greater job satisfaction for the construction professionals. Since quality management is critical to the success of project execution, therefore all project participants must

accord the attainment of prescribing quality at first attempt and a top priority by trying to emulate the most significant factors influencing project quality.

The management should focus on the need to explore systems or models that would focus on communication and interactions in the project team, and hence facilitate understanding of the participants‟ requirements and improve the satisfaction assessment process. More so, the managements of the construction organizations should impose strict supervision and compliance to established design standards. More so, construction and consulting firms needs to gear up their level of services, by engaging skilled workforce in handlings of plants and materials; qualified personnel in managerial position and efficient communication among construction professionals in closing the gaps between the current and desired level of clients' satisfaction and to enable them to meet the desired level of clients' satisfaction.

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