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An Assessment of the Impact of Quality Assessment System on Building Projects in Lagos State, Nigeria

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Abstract:
Quality practices focus on producing quality buildings in terms of aesthetics, durability, functionality, reduced cost and time completion of project. The aim of this study is to assess the impact of quality assessment system on building projects in Lagos state. In order to realize this aim, the study examined the impacts of quality assessment system on building project in the study area. The study employed a descriptive case study design where data was collected from senior managers, project managers, engineers, architects, quantity surveyors, and technical managers working with building construction companies in the Lagos Metropolitan Area using the mixed method approach. Quantitative data was collected using questionnaire from 109 randomly selected participants and analysed using descriptive and inferential statistics. Qualitative data was collected through interviews with 9 purposively selected respondents and analysed using the thematic analysis technique. The study shows that quality assessment help us timely completion of construction projects within planned budget, improvement of the image of the firm Quality assessment as well as reduced project delivery time. The study concludes that the most visible impact of implementing quality assessment was an increase in customer satisfaction as conducting quality assessment reduces the number of customer complaints and helps the companies to reduce material wastage, increase confidence and team spirit among project workers, improve safety records, and enhance the image of the company. The quality assessment has a significant positive impact on project delivery in Lagos Nigeria.

Keywords: *Quality, quality assessment system, customer satisfaction, building projects*

1. Introduction

Quality assurance in the industry should also include consideration for cost and time implication. Quality practices not only focus on producing quality buildings in terms of aesthetics, durability and functionality, it also focuses on reducing the cost and time implications of the completed project. Utilization of new and improved technology can help contractors provide quality services at reduced costs and using shorter time spans (Zeng, Tam, & Tam, 2015). For instance, the use of prefabricated segments in construction has been shown to reduce significantly the time and cost implications of a construction project. Crucial to delivering quality in construction projects is engaging in quality planning. With reliable quality and planning, the construction industry would not only expand, it would survive social change and become the key economic driver well into the future.To date, numerous buildings including residential houses have collapsed killing many people and injuring scores of others. The damages caused by collapsing buildings differ from time to time. On September 12, 2014, a six-story guesthouse at the Synagogue Church of All Nations in Lagos State collapsed, killing 115 and injuring 131, and sparking a national dialogue on building safety (Babatunde, Perera, Zhou & Udeaja, 2015). Incidents of collapsed buildings are common in Nigeria with most cases being reported in Lagos. Between 2007 and 2012, national statistics indicate that there were 130 cases of collapsed buildings in Lagos alone. Nationwide, more than 135 buildings were reported to have collapsed in 2013 alone. The high rate of collapsing buildings can be attributed to poor workmanship and utilization of poor quality materials.

2. Literature Review

The instrument used in quality assessment must satisfy the construct, content, and criterion validity requirements. Construct validity is the extent to which a given instrument measures what it purports to measure (Carmines & Zeller, 1999). It is mainly determined by how the instrument developers have conceptualized the concept of quality and its

variables. Realizing construct validity is often a difficult task due to the ambiguity of the quality concept. On the other hand, content validity is the extent to which the instrument covers all the facets of quality (Ibid). It is concerned with the comprehensiveness of the assessment tool.

3. Methodology

This study will employ descriptive cross-sectional case study design, this cross-sectional design is selected to understand the current situation in the Lagos construction industry with regard to quality assessment rather than test the effect or a program. The target population comprises of senior managers, project managers, technical managers, architects, quantity surveyors, and engineers working with building contractors operating the Lagos Metropolitan Area, these are selected because they are actively involved in the planning and management of construction projects; hence, they are likely to provide the information needed to answer the research questions. Survey revealed that 1771 construction companies were registered in Lagos (Public Procurement Agency, Alausa Ikeja, 2018). 1000 construction companies are from LMA which comprises 13 local government area. The population of his study is 1000 construction companies. This study made use of the Taro Yamane sample size formulae to determine the appropriate sample size for collection of quantitative data:

$$n = \frac{N}{1+N*(e)^2}$$

Where N= Population, n= Sample size and e= Margin of error

Since the unit of analysis is the building construction company, the number of registered building construction companies in Lagos Metropolitan Area will serve as population size. The population size is 1000. The margin of error is set at 5%. Using the formulae, the desired sample size would be:

$n = 1000/ [1+ \{1000* (0.05)^2\}]$

$n = 285.7 \approx 286$ companies.

The purposive sampling technique is adopted as it entails selecting participants based on the researcher's judgment regarding his or her ability to provide the require information. The audio-recorded Interview is the main method of data collection which took between 30 and 45 minutes depending on the level of details provided on the quality assessment methods that are currently used in their organizations, how these methods impact performance, challenges involved in implementing quality systems, and factors critical to the successful implementation of a QAS. questionnaires to 100 building construction companies operating in the Lagos Metropolitan Area. The first instrument of data collection is a semi-structured interview guide selected because of its ability to facilitate the collection of rich and contextual information, which is in line with the goal of the study while the structured questionnaires comprises of multiple choice questions to collect quantitative data via clustered random sampling method. The transcript for each interview will be analysed using t-tests to measures the impact of quality assessment system on project delivery in Lagos while the Principal Component Analysis (PCA) is used to reduce the number of variables while retaining the original variance as possible. Th method is to determine the method and approaches that the Lagos contractors are currently using to assess quality in their organizations as well as the major problem facing building contractors in applying quality assessment systems in Lagos, Nigeria. For internal validity, the researcher discussed the questions contained in the research instruments, design and method used in data collection and analysis with the experts to ensure that they capture what the study intends to measure. For external validity to enhance the generalizability of findings, the researcher documented the study methods and procedures in a clear and elaborate fashion. The reliability of the study was enhanced by conducting a pilot study before the main data collection exercise. The pilot involved a total of 10 builders and utilized the test retest approach. The responses for the first and second round were compared using the Pearson Product Moment Correlation Coefficient at a threshold of 0.7. The test yielded a correlation coefficient of 0.87 leading to the conclusion that the instrument is highly reliable.

4. Results and Findings

The study sought to establish how quality assessment (QA) had impacted the respondents' organizations. To realize this objective, respondents were presented with a series of statements relating to impact of QA and asked to indicate the extent to which they agree with these statement on a five point Likert-type scale (1=Strongly Disagree, 2= Disagree, 3=Neither Agree nor Disagree, 4=Agree, and 5= Strongly Agree). Participants' responses were analyzed using descriptive statistics specifically mean and standard deviation with aid of the statistical package for social sciences. In this case, the mean ranged between 1 and 5 with means closer to 1 suggesting that the majority of the participants disagreed with the statement and means closer to 5 suggesting that the majority of participants agreed with the statement. Results are presented in Table 10:

Statement	n	Mean	S.D
Quality assessment helped us to reduce project delivery time	261	3.42	.734
Quality assessment help us to complete projects within planned budget	261	3.23	1.044
Quality assessment help increase confidence and team spirit among project workers	261	3.91	.632
Quality assessment has helped us to reduce material wastage	261	4.01	.515
Quality assessment enables us to increase customers' satisfaction	261	4.27	.628
Quality Assessment has helped us reduce number of customer complaints	261	4.13	.619
Quality assessment has led to an improved safety record.	261	3.89	.419
Quality assessment has led to increased sales and profits	261	3.64	.534
Quality assessment help us to improve the image of the firm	261	3.73	.750

Table 1: Average Agreement with Statements Relating to Impact of QA
Source: Field Survey, 2017

As the Table illustrates, the statement that QA had enabled the organization to increase customer satisfaction had the highest mean score (*M*= 4.27, *S.D. =*.628). This implies that this is the statement that had the highest level of agreement among participants. This result is consistent with the study by Obunwo *et al*. (2015), where it was found that construction quality attributes explained 58.3% of variation in the level of customer satisfaction in the Lagos context. Sabek (2015) also found that one of the benefits that result from the ssuccessful implementation of a QAS is improved customer satisfaction. The statement with the second highest mean score was that QA has helped the organization to reduce number of customer complaints (*M*=4.13, *SD*= .619). This statement is closely related to that of customer satisfaction and the result confirms the strong link between construction quality and level of customer satisfaction.

Another statement that was strongly endorsed by a large number of participants was that QA had helped them to reduce material wastage (*M*= 4.01, *SD*=.515). This position is consistent with Feigenbaum concept of the 'hidden plant'. Freigenbaoum describe the 'hiddeb plant' as the proportion of a firm's capacity that is wasted through not doing things right the first time (Watson, 2005). He proclaimed that all companies have between 15% and 40% of their capacity being wasted through non-conformance. Crosby also asserted that the cost of poor quality is often exhibited in terms of wastage of material and labor (Hellman & Liu, 2013). Consequently, improving quality has the potential of eliminating wastage resulting in significant cost reduction.

There was also a high level of agreement with the statement that QA had assisted the organizations to boost the confidence and team spirit among project workers (*M*=3.91, SD=.632). The finding is consistent with Manghani (2011) who found that by increasing customer satisfaction, QA helps to improve employee morale resulting in even higher performances. QA also provide feedback to employees that enable them to know whether they are moving in the right direction resulting in greater confidence. Confidence and team spirit are essential ingredients for the success of all projects. Deming noted that improvement cannot be made if members of the organization lack the confidence to act and try new ways of doing things (Huda, 2008). He insisted on the need to drive out fear among organizational members.

Participants also supported the claims that QA had led to improved safety records (*M*=3.89, *SD*=.419), enhanced company image (*M*=3.73, *SD*=.750), and increased sales and profits (*M*=3.64, *SD*=.534). These findings are consistent with Hoonakker *et al*. (2010) who also found that quality assessment in the US construction industry was associated with improved safety, and consequently, improved profitability. Sabek (2015) also found that QA was associated with greater organizational efficiency, enlarged market share, repeat patronage, and growth. There was a high level indifference regarding whether QA had reduced project delivery time (*M*=3.42, *SD*=.734) or helped the organization to complete projects on time (*M*=3.23, SD=1.044). This position may largely be attributed to the fact that project timeline and cost are complex issues that are influence by other numerous variables besides quality.

5. Conclusion

The most visible impact of implementing quality assessment was an increase in customer satisfaction. There was strong agreement among participants that the quality assessment process had improved the level of customer satisfaction. There was also a strong agreement that conducting quality assessment reduces the number of customer complaints. There was a high level of agreement among participants that the quality assessment process help the companies to reduce material wastage, increase confidence and team spirit among project workers, improve safety records, and enhance the image of the company. See Table 1. The quality assessment has a significant positive impact on project delivery in Lagos Nigeria.

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