AN EVALUATION OF FACTORS INFLUENCING CONTRACTORS' PERFORMANCE IN CONSTRUCTION PROJECT DELIVERY

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ABSTRACT

This research is aim evaluating the factors influencing contractors' performance in construction project delivery in Nigeria. In order to achieve the aim, the following are objectives of the research: to identify the level of performance criteria for construction project delivery in the study area, to investigate the factors affecting contractors' performance in construction project delivery in the study area, to determine the effect of strategies for improving contractor's performance in construction project delivery in Nigeria. Survey research design was used for the study. The target population for the study comprised of all the contractors working with private or public organization, consultants or contractors in Bauchi metropolis. stratified random sampling was used to select the samples from the general population. Questionnaire was designed to achieve the research objectives, As a research instrument, questionnaires were structured to obtain primary data from respondents. The analysis of the acquired data through questionnaire distribution was processed using the Statistical package for social sciences (SPSS) software version 25. The result showed that Performance criteria for construction project delivery (Alpha = 0.792): This construct comprises 15 items and achieved a Cronbach's alpha coefficient of 0.792. Typically, a coefficient above 0.7 is considered acceptable for research purposes, suggesting a moderate to good level of internal consistency. The findings are as follows High-Ranking Performance Criteria, Poor Planning (Mean: 4.56, SD: 0.89): Ranked as the most critical issue, indicating that inadequate or ineffective planning significantly impacts project delivery. Experience and Expertise (Mean: 4.80, S.D: 0.95) - Ranked 1st, Resource Availability (Mean: 4.20, S.D.: 1.02). The regression model summary and the ANOVA results of the dependent and independent variables. The model reported R-Value of 0.111 and R-Square value of 0.012 with an F-statistics value of 1.638 were insignificant, as shown by ρ-value of 0.203, far above the recommended maximum of 0.05 (Pallant, 2011). It was concluded that Issues arising from project works which can affect the performance may include incompetent contractors, poor estimation and change management, social and technological issues, site related issues and improper techniques and tools. It was recommended that the contractors should pay more attention to training the subsidiary staffs for effective project handing and

project delivery. The government should create more by law to government the handling of project works for effective delivery to avoid giving out contract to unqualified contractors.

INTRODUCTION

Nigeria with a population of over 170 million is urbanizing at one of the fastest rates in the world as indicated by Bust and Pink (2018). In addition, construction is now only 3.2 % of the Gross Domestic Product (GDP) from 2009 to 2020. According to Global Construction Perspectives Oxford Economics (GCPOE, 2010) report, construction industry is very important in the economic development of any nation especially Nigeria as a developing country. A Contractor can be seen as any person who performs work with employees, subcontractors or any combination and must have internal control overestimate (Lassila & Partanen, 2019).

Contractor's performance according to Hodge and Greve (2017), has long been well defined in terms of cost, time and quality, and each of these aspects has been the subject of much research and even other researchers have attempted to examine contractor performance more comprehensively. Contractor's performance is critical to the success of any construction project as it is contractors who convert designs into practical reality within time limit, to an acceptable standard and cost conscious (Zou, Zhang, & Wang, 2017). Alwi (2013) conducted research on the factors influencing contractor's productivity in Indonesia. He concluded that productivity in the construction industry in Indonesia is not only influenced by labour, but also by other factors such as equipment, materials, construction methods, and site management.

However, most of these procedures according to Ajayi et al. (2010) limit their analysis to selected measures such as cost, schedule or labour productivity. Construction performance embraces client's satisfaction, time performance, cost performance, construction quality and sustainable development. Cheng et al. (2011) evaluated the performance of subcontractors and identified 12 factors that are tied to the performance of the subcontractor. Among the factors are construction techniques, duration control abilities, and material wastage and so on. Mbachu and Nkando (2017) established that quality and attitude to service is one of the key factors constraining successful project delivery in South Africa.

This draws to the fore that the problem of poor project performance is a global issue that heightens the woeful nature of many countries in which Nigeria cannot be left out. This situation should not be left unaddressed because it would lead to more severe problems in the future forthcoming construction projects (Othman and Ahmed, 2013). Nonetheless, few researches had been carried out to identify the critical factors affecting the performance of the construction project in Nigeria. However, these factors are not sufficient enough to be used as a reference for poor construction project performance in Nigeria because all aspect of construction performance has not been dealt with (Helen et al., 2015). Therefore, this study was intended to identify factors influencing contractors' performance in construction project delivery.

LITERATURE REVIEW

The concept of a Contractor

A contractor is someone who enters into a binding agreement to perform a certain service or provide a certain product in exchange for valuable consideration, monetary, goods and services. In building industry, contractor is a person that is in conjunction with other workers and professionals, agreed to engage and perform a construction or building related services for a client (Assaf and Al-hejji 2016).

Similarly, Forbes and Ahmed (2010) define contractor as someone who assemble and allocate construction resources, which are labour, equipment and materials to a project in order to achieve completion with maximum efficiency in terms of time, quality and reasonable cost. A good contractor understands that the success of the project depends on his or her ability to hire the right independent subcontractors and follow the wishes of the client. Smith and Lipsky (2019) state that contractor is a person or company that undertakes a contract to provide materials or labour to perform a service or do a job. Contractor also can be defined as a person who may perform the work with employees, subcontractors or any combination and contractor must have internal control over estimating and job cost process (Lassila and Partanen, 2019). Contractor is a person who can reward, undertakes to carry out and complete any construction work for another person, of any structure situated on or above the ground water bodies (Sannwald 2019).

Types of Contractors

- **Petty Contractor**

The petty contractor is generally referred to as a one-man contractor. This category of contractors usually consists of one man industry, sometimes assisted by a limited amount of unskilled workers. The petty contractors normally do not possess any equipment, and lack any means of transport. Due to their lack of mobility, they have to be recruited from the vicinity of the work sites. These contractors are mainly used for maintenance works, such industry can be utilized for contracting out masonry works for small bridges and culverts (Johannessen and Works, 2009).

- **Small-Scale Contractor**

Most domestic small-scale contractors are found in the building construction industry and the transport industry and are normally registered companies. According to Johannessen and Works, (2009), the small scale contractor has certain technical and managerial skills. However experience shows that their organization requires further training in business management, accounting, mechanical maintenance, road maintenance, as well as in labour-based work methods. Similarly, their equipment's are often old and poorly standardized, before they can be awarded road rehabilitation works, it is usually necessary to assist them in the acquisition of additional light construction equipment such as hauling and compaction.

Similar to the petty contractors, the small-scale contractors are often under-financed and vulnerable to cash-flow distortions. Often, these contractors do not operate their accounts through a bank. In many cases, the local banks do not consider these firms as attractive clients and therefore do not provide them any services (Johannessen and Works, 2009).Although some of these firms are mainly involved in building works, they can provide a business entity, and an established organization with administrative, financial and technical staff which could be further trained and developed to cater for the requirements of a rural road works. After receiving appropriate training and development assistance, these contractors prove to be highly efficient in carrying out both road construction and maintenance works. They can constitute an important component of the domestic construction industry (Farooquie and Farooquie, 2009).

- **Large scale contractor**

Large scale contractor is often subsidiaries of large foreign multi-national companies which have good access to capital, equipment and skilled labour. This type of contractor participates in international competitive bidding and is often present in country while they are carrying out a works contract. Once their assignment has been completed, they leave the country, including evacuating equipment and skilled personnel. Due to this, their involvement provides a minimal technology transfer to the recipient country, resulting in a low sustainability and little institutionalization of skills and experience (Aharon *et al*., 2011). In most cases, they regard the size of labour-based road contracts as too small for their interest. For these reasons, this category of contractors is not regarded the appropriate beneficiary target group for training and development assistance (Wang, 2010).

Performance

Performance is the measure of the ability of contractors to execute work on time, cost and quality. There are several aspects to performance, and the objective to getting most from the system is to keep each of the components in balance, not allowing any to become a bottleneck (Henry, 2012). The accomplishment of a given task measured against present known standards of accuracy, completeness, and cost in a contract, performance is deemed to be the fulfilment of an obligation, in a manner that releases the performance from all liabilities under the contract (Shyam and Shani, 2012).

Construction Projects Performance

Construction projects are always unique and different in one way or another. This often creates problems for even the most experienced project managers (Pheng and Chuan, 2016). Aje, *et al.,* (2009), identified the main performance criteria of construction projects details are as follows:

- **Standard of quality:** Project quality management ensures that the project will satisfy the needs for which it was undertaken (Schwalbe, 2013).

- **Relationship with clients:** Client Relationship with client means managing your client. It is a business strategy which is used to create and sustain long-term, profitable client relationships (Maister, 2017).

- **Management capabilities:** Forbes and Ahmed (2010) noted that, Capability management is greatly assisted by modelling and simulating realistic strategic scenarios and contexts, in order to inform business cases and decision-making. Through those considerations and practices, the enterprise and its performance can be continuously assessed and projected into the future.

- **Construction time:** Aje, et al., (2019), state that construction time is increasingly important because it often serves as a crucial benchmarking for assessing the performance of a project and the efficiency of the project organization. Moreover, Pheng and Chuan (2016), identified project performance categories such as people, cost, time, quality, safety and health, environment, client satisfaction, and communication. Pheng and Chuan (2016) remark that human factors played an important role in determining the performance of a project.

The research conducted by Pheng and Chuan (2016), reported that, Shortage of skills of manpower, poor supervision and poor site management, unsuitable leadership, Shortage and breakdown of equipment among others contribute to construction delays in the United Arab

Problems of Performance in Construction Industry

Project is mainly related to problems and failure in performance. Moreover, there are many reasons and factors which attribute to such problem. Majid (2016), state that, the construction industry performance problems in developing countries can be classified in three (3) layers: problems of shortages or inadequacies in industry infrastructure (mainly supply of resources), problems caused by clients and consultants and problems caused by contractor competence or inadequacies.

Furthermore, Zou and Wang (2017) stress that performance problems arise in large construction projects due to many reasons such as incompetent contractors, poor estimation and change management, social and technological issues, site related issues and improper techniques and tools. According to Navon *et al.,* (2015), state that the main problems of performance can be divided into two (2) groups, which are

(a) unrealistic target setting that is planning or

(b) causes originating from the actual construction (in many cases the causes for deviation originate from both sources).

Henri (2016) found that the traditional performance measurement systems have problems because of large and complex amount of information with absence of approaches to assist decision maker understand, organize, and use such information to manage organizational

performance. Apart from that, Kim *et al.,* (2019) state that international construction projects performance is affected by more complex and dynamic factors than domestic projects; frequently being exposed to serious external uncertainties such as political, economic, social, and cultural risks, as well as internal risks from within the project.

Objectives

i. To investigate the factors affecting contractors' performance in construction project delivery in the study area.

ii. To determine the effect of strategies for improving contractor's performance in construction project delivery in Nigeria.

METHODOLOGY

Table 1: The factors affecting contractors' performance in construction project delivery in the study area.

S/N	Factors affecting contractors' performance	Mean	S.D.	Rank
1	Experience and Expertise	4.80	0.95	1st
2	Resource Availability	4.20	1.02	2nd
3	Project Management Skills	4.15	1.06	3rd
4	Communication and Collaboration	4.05	0.79	4rd
5	Regulatory Compliance	3.50	0.89	5th
6	Risk Management	3.65	0.87	6th
7	Quality Control and Assurance	3.50	0.97	7th
8	Financial Management	3.42	0.99	8th
9	Technology and Innovation	3.10	0.89	9th
10	Subcontractor and Supplier Relationships	2.85	0.88	10th
11	Weather and Environmental Factors	2.95	0.94	11th
12	Changes in Scope or Design	2.75	0.91	12th
13	Client Relationships	2.65	0.83	13th
14	Labor Relations and Workforce Management	2.55	0.89	14th
15	Geopolitical and Economic Factors	2.25	0.88	15th
16	Project Complexity	1.58	0.85	16th
17	Safety Culture	1.54	1.09	17th
18	Availability of Skilled Labor	1.05	0.81	18th

Table 1 shows the factors affecting contractors' performance in construction project delivery in the study area. The factors are ranked based on their mean scores and standard deviations, Experience and Expertise (Mean: 4.80, S.D.: 0.95) - Ranked 1st, Resource Availability (Mean:

4.20, S.D.: 1.02) - Ranked 2nd, Project Management Skills (Mean: 4.15, S.D.: 1.06) - Ranked 3rd, Communication and Collaboration (Mean: 4.05, S.D.: 0.79) - Ranked 4th Regulatory Compliance (Mean: 3.50, S.D.: 0.89) - Ranked 5th, Risk Management (Mean: 3.65, S.D.: 0.87) - Ranked 6th, Quality Control and Assurance (Mean: 3.50, S.D.: 0.97) - Ranked 7th, Financial Management (Mean: 3.42, S.D.: 0.99) - Ranked 8th, Technology and Innovation (Mean: 3.10, S.D.: 0.89) - Ranked 9th, Subcontractor and Supplier Relationships (Mean: 2.85, S.D.: 0.88) - Ranked 10th, Weather and Environmental Factors (Mean: 2.95, S.D.: 0.94) - Ranked 11th, Changes in Scope or Design (Mean: 2.75, S.D.: 0.91) - Ranked 12th, Client Relationships (Mean: 2.65, S.D.: 0.83) - Ranked 13th, Labor Relations and Workforce Management (Mean: 2.55, S.D.: 0.89) - Ranked 14th, Geopolitical and Economic Factors (Mean: 2.25, S.D.: 0.88) - Ranked 15th, Project Complexity (Mean: 1.58, S.D.: 0.85) - Ranked 16th, Safety Culture (Mean: 1.54, S.D.: 1.09) - Ranked 17th, Availability of Skilled Labor (Mean: 1.05, S.D.: 0.81) - Ranked 18th.

Moreover, the results demonstrate that factors like experience, resource availability, project management skills, and effective communication play pivotal roles in contractors' performance. These high-ranking factors signify critical areas that, when addressed efficiently, are likely to enhance project outcomes. However, lower-ranked factors such as safety culture, project complexity, and availability of skilled labor also deserve attention, despite their comparatively lower mean scores. Neglecting these factors could potentially lead to significant challenges or hurdles in project delivery. The discussion of these findings might delve into strategies to leverage the top-ranking factors for improved performance, as well as proactive measures to address and elevate the impact of lower-ranking factors. Additionally, understanding the interplay between these factors and their implications on project success could offer valuable insights for stakeholders aiming to optimize construction project delivery in the studied area.

Research question Three: the strategies of improving contractor's performance in construction project delivery in Nigeria. Linear regression was also used to determine the effects of the challenges of application of non-financial motivation on the productivity of labour.

Table 5: effect of the strategies for improving contractor's performance in construction project delivery in the study area.

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	F	Sig.
1	.111a	.012	.005	.62997	1.638	.203b

a. Predictors: Dependent Variable: performance measured using and client satisfaction.

b. Independent Variables: influence or impact the contractors' performance.

Table 5: shows the regression model summary and the ANOVA results of the dependent and independent variables. The model reported R-Value of 0.111 and R-Square value of 0.012 with

an F-statistics value of 1.638 were insignificant, as shown by ρ-value of 0.203, far above the recommended maximum of 0.05 (Pallant, 2011). However, about 01.2% of the influence or impact the contractors' performance is influenced by the performance measured using and client satisfaction. Moreover, the result also indicated that performance measured using and client satisfaction have negligible effect on influence or impact the contractors' performance. This result disagrees with that of (Alkilani & Loosemore, 2022; Hu et al., 2009) that construction labour productivity significantly influences the profitability of construction companies; however, construction labour productivity exhibits the highest variability among project resources and is a major source of project risk.

Conclusion

Base on the result obtained from the research and the summary of the findings it was concluded that Issues arising from project works which can affect the performance may include incompetent contractors, poor estimation and change management, social and technological issues, site related issues and improper techniques and tools. Performance measurement systems may develop problems because of a large and complex amount of information with absence of approaches to assist decision maker understand, organize, and use such information to manage organizational performance, however it can be said that clarity of information passed can affect the communication level of the project which can also affect its performance at the long run, for the project to be successful there must adequate dissemination of information and adequate feedback of such information to ensure the message is well received and acted upon.

Changes in construction projects can cause substantial adjustment to the contract duration and construction cost. Shortage of construction materials during periods of high development where the level of construction activity is unusually high in a particular region; there may be shortages of some construction materials. Sometimes, the local market may not be able to supply the full demand of these construction materials.

Furthermore, Due to lack of good management, which most of the times hinder contractor's performance in the construction project Unavailability of highly experienced and qualified personal, poor quality of available equipment and raw materials

Recommendation

Based on the summary of the findings and conclusion it was recommended that

i. It was recommended that the contractors should pay more attention to training the subsidiary staffs for effective project handing and project delivery

ii. The government should create more by law to government the handling of project works for effective delivery to avoid giving out contract to unqualified contractors

iii. More attention should be given to the professional body for adequate guidance and monitoring of project works to avoid mistakes that to led to delay of project work

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