

Determinant of Construction Project Performance in Birnin Kebbi

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Abstract

Performance in building construction projects remains a vital issue all over the world; this is so because construction projects involve defined and clear objectives which must be met and several which need to be efficiently put to use. This study assessed the determinant of construction project performance. Primary data were obtained from Kebbi state Ministry of Works and Housing, Birnin Kebbi through a well-structured questionnaire in which 60 questionnaires were administered and 49 retrieved. Relative Importance Index (RII) and Mean Item Score (MIS) were employed for the analysis of data. The study found that the most important factor influencing performance of construction projects is improper planning and management (RII = 1.00). It was also discovered that the most significant effect of factors influencing performance on construction projects is total abandonment (MIS = 4.96). Having appropriate planning was found to be the most effective strategy for improving the performance of construction projects (MIS=4.94). It was concluded that the determinant factors of building construction project performance in Birnin Kebbi are significant.

Keywords: Performance, Construction projects, Determinants, Contractors, Professionals.

Introduction

The construction industry is very important in the economic advancement of any nation especially in expanding economy like Nigeria (Oladipo, Fatuki and Aluko, 2015). Construction activity is an integral part of a country's infrastructure and industrial development and must be taken care of for the healthy growth of the economy, therefore, it is imperative to put an all-out effort into ensuring that projects are completed as per the stipulated objectives (Nipin, 2015). Oyedele (2013) remarked that construction projects are proceeding to meet the targeted cost, schedule and achieved the quality standard set out. However, Construction performance embraces client satisfaction, time performance, cost performance, construction quality and sustainable development (Babalola *et al.*, 2015). Babalola *et al.* (2015) further revealed that the performance of a contractor will correlate with the performance of the contract. Construction time is also important as it can serve as a benchmark for assessment of the performance (Melba, Dhanya and Ganapatithy, 2015).

Construction Industry is one of the very fast-growing industries but it also faces many problems that impinge on the performance of their projects and could lead to breakdown due to poor performance of the industry (Melba *et al.*, 2015). Project performance is a chronic issue for the construction industry, as such, project deliverables such as timely completion and client satisfaction are often used as yardsticks to determine success (Peter and Evelyn, 2015). Construction projects suffer from many problems and complex issues in performance such as time, cost, quality and safety (Ghanim, 2017). Despite the construction industry's significant contribution to the economy of developing countries like Nigeria and the critical role, it plays in those countries' development, the performance of the

industry remains generally low. Peter and Evelyn (2015) then proclaimed that construction projects' performance problem appears in different directions. Many constructed projects fail in time performance, some fail in cost performance and others fail in other performance indicators. For every construction project, several deficiencies occur and continue to occur. Occasionally, new problems develop and despite efforts to implement success factors for good performance, these problems have persisted. Given this, research has been carried out on factors affecting construction project performance in different areas. In a study conducted by Melba *et al.* (2015) on analysis of factors affecting the performance of the construction projects in the regions of Chennai, Kerala and Bangalore; it was indicated that the breakdown of many of the construction industries is due to the poor performance of the industries. Increasing and high cost of machinery and materials was discovered to be the most factor affecting the performance of the construction projects. These problems are the same as those in Nigeria construction projects, where most of the projects were commissioned by the government and constructed by inexperienced contractors who were mostly selected on client subjective biases, the issue of determination of construction project performances has been a subject of discussion for decades by all project stakeholders. Available literature shows that the majority of these studies focused on the project contextual level and discusses from either the project perspective or the contractor's viewpoint. In summary, few studies focus on the determination of project performance from a point of professionals and in a specific location. It is against this background that this research is assessing the determinant of construction project performance using Kebbi State as a case study. To achieve the aim, the study identified and examined the factors influencing the performance of construction projects; established the effect of factors influencing performance on construction projects and suggested strategies for improving the performance of construction projects.

Literature Review

This section gives a review of relevant literature to the theme of the study. In the context of this study, "project success" is defined as the completion of a project within an acceptable time, cost and quality and achieving client satisfaction. Project success can be achieved through the good performance of indicators of the project. So, success refers to project success and performance refers to the performance of indicators such as project managers.

Concept of Construction Project Performance

The construction itself is a very time-consuming process and the success of construction depends on its performance (Saraf, 2015). Ali *et al.* (2019) indicated that a construction project is completed through the integration of many events and interactions, planned or unplanned, over the life span of a facility, with changing participants and procedures in a constantly changing environment to achieve its desired goal "success". Although construction projects are by their nature repetitive activities, each one has its characteristics and circumstances. Peter and Evelyn, (2015) stated that the success of any project is related to two important features, which are service quality in construction delivered by contractors and the project owner's expectations. Peter and Evelyn, (2015) further revealed that managing construction projects so that all the participants perceive equity of benefits can be crucial to project success. However, it is obtained that the complete lack of attention sacrificed to the owner's satisfaction contributes to poor performance. It was also established by Ghanim, (2017) that a performance measurement system can be defined as a set of information, which is at the heart of the performance management process and it is of critical importance to the

effective and efficient functioning of the performance management system. Performance measurement can also be defined as the process of quantifying the efficiency and effectiveness of an action.

Factors Influencing Performance of Construction Projects

Peter and Evelyn, (2015) define a factor as any circumstance, fact, or influence which contribute to a result” and further describe factors for project success as influential forces that either facilitate or impede project success. Many factors obstruct the performance of construction projects which causes a delay in construction or failure in construction (Saraf, 2015). However, Helen and Oyewale, (2016) claimed some factors influencing the performance of construction projects include: Contractor’s inexperience, inadequate planning, Inflation, incessant variation order, and change in project design. Other factors include Project complexity, shortening of project period and fraudulent practices.

In addition, in a study conducted by Saraf, (2015), it was reported that various factors lead to performance problems. Some of the major problems according to Saraf, (2015) include the following: Improper planning; improper designing; contract management; decision making; improper communication; construction methods; the complexity of the project; quality assurance; quality & shortage of material; shortage of labour & technical personnel; availability of equipment’s and failure; unforeseen site condition; attitude of site personnel towards work; weather condition; finance & payment of completed work; major disputes & negotiation; productivity; construction mistakes and defective work and client’s satisfaction.

Effects of Factor Influencing Performance on Construction Projects

According to Designing Building Ltd Wiki, (2020) An effect is a condition, agency or force that impedes progress towards an objective or goal. There are several different types of effect of factors that can affect the performance of construction projects. Factors influencing construction project performance and its effect should be identified and described in as much detail as possible during the early stages of a project so that awareness of them and their potential impact can be managed. This includes understanding the Dynamics of the project and how different factors interrelate, as well as being clear about any potential risks and who is responsible for them.

Isah (2019) had pointed out some effect factors affecting the performance of construction project which includes: Timely completion of projects, regular payment for plant higher and acquisition, regular and prompt order of materials, total abandonment, disputes, arbitration, litigation, poor quality of end product, loss of productivity and efficiency, damage company reputation. In another similar study conducted by Anwar, Eduardo and Mohammad (2019), the effect of factors influencing the performance of construction projects were revealed to be; Project stoppages, Periodic changes in the scope of the project, Repair / Reworks, Delays in reaching material at the site, Delays in reaching plant and machinery at the site, disputes, Frequent design changes, Lack of willing Project managers and Skilled labour Deficiency.

Strategies for Improving the Performance of Construction Projects

The concept of performance in a construction project according to some researchers can be assessed only when the performance criteria or evaluation dimensions are properly defined (Olanipekun *et al.*, 2017). performance in building construction projects remains a vital issue all over the world; this is so because construction projects involve defined and clear objectives which must be met and several which need to be efficiently put to use. Olanipekun *et al.* (2017) further established possible ways for improving performance in building construction projects which includes; having appropriate planning, good leadership, good communication, stakeholder relationship, timely documentation, comprehensive analysis, understanding peoples' requirements and needs, effective contractors and workers' relationships minimizing variation.

Construction is an extremely important job for accuracy. However, clients usually want their buildings and projects done as quickly as possible (Rhumbix, 2018). Some of the major ways to improve the performance of construction projects according to Rhumbix (2018) include; communication, reward regularly, training of the workers, hiring of good management, keeping track of materials.

Research Methodology

The structured questionnaires employed to gather information for the study was designed using the five-point Likert's Scale format. RII and MIS were employed to analyse the data collected to achieve the research objectives. The use of RII and MIS for the analysis of data in this study is based on the formula depicted in Equations 1.0 and 2.0.

$$RII = \frac{\sum W}{A \times N} \dots \dots \dots (1.0)$$

Where;

Σ = Summation, W = the weights of every one of the factors given by respondents and it was in the range of (1 - 5), (A=5) the largest value of weight (i.e Highest factor) and finally N refers to the Total number respondents.

$$MIS = \frac{\sum W}{N} \dots \dots \dots (2.0)$$

Where: Σ = Summation, W = Weight, and N = Total number respondents

The decision rule employed for the RII and MIS analysis is summarized in Table 1.

Table 1: Decision Rule for Data Analysis

SCALE	Cut-Off Point		Interpretation			
	RII	MIS	Frequency of Occurrence	Level of Importance	Level of Significance	Level of Effectiveness
5	0.81 - 1.00	4.51 - 5.00	Very Often	Very Important	Very Significant	Very Effective
4	0.61 - 0.80	3.51 - 4.50	Often	Important	Significant	Effective
3	0.41 - 0.60	2.51 - 3.50	Fairly Often	Fairly Important	Fairly Significant	Fairly Effective
2	0.21 - 0.40	1.51 - 2.50	Less Often	Less Important	Less Significant	Less Effective
1	0.00 - 0.20	1.00 - 1.50	Rarely	Least Important	Least Significant	Least Effective

Source: Adapted and Modified from Shittu *et al.* (2015)

Result and Discussion

This section gives a presentation of the results from data analysis. The discussion and summary of findings of literature findings were also done in the section.

Results on Causes of Variation on Public Building Projects

This section presents and discusses the RII results of the factors influencing the performance of construction projects of which 23 factors were identified. The RII results are presented in Table 2.

Table 2: Factors Influencing Performance of Construction Projects

S/N	Factors Influencing Performance of Construction Projects	RII	Rank
1	Improper planning & Management	1.00	1st
2	Contractor's Inexperience	0.99	2nd
3	Attitude of site personnel towards work	0.98	3rd
4	Inadequate planning	0.91	4th
5	Unavailability of resources	0.85	5th
6	Client's satisfaction	0.83	6th
7	Escalation of material prices	0.83	6th
8	Decision making	0.82	8th
9	Improper communication	0.81	9th
10	Unavailability of highly experienced and qualified personnel	0.78	10th
11	Shortening of project period	0.78	10th
12	Project complexity	0.78	10th
13	Improper designing	0.75	13th
14	Shortage of labour & technical personnel	0.75	13th
15	Poor quality of available equipment and raw materials	0.74	15th
16	Shortage of material	0.74	15th
17	Finance & payment of completed work	0.74	15th
18	Major disputes & negotiation	0.69	18th
19	Unforeseen site condition	0.68	19th
20	Change in project design	0.65	20th
21	Construction methods	0.65	20th
22	Weather condition	0.65	20th
23	Construction mistakes and defective work	0.62	23rd

Source: Researcher's Data Analysis (2021)

It was revealed in Table 2 that improper planning and management were ranked as the most important factor influencing the performance of construction projects (RII = 1.00). Other factors were important and fairly important (RII = 0.62 – 0.99). Therefore, RII observed ranges from 0.62 – 1.00. These findings are in line with the findings of Helen and Oyewale, (2016) where results show that the most significant factors are: contractor's inexperience and inadequate planning.

Findings on Effect of Factors Influencing Performance on Construction Projects

This section presents and discusses the effects of factors influencing performance on construction projects, sixteen (16) factors were identified and ranked with the aid of (MIS) as shown in Table 3.

Table 3: Effect of Factors Influencing Performance on Construction Projects

S/N	Effect of Factors Influencing Performance on Construction Projects	MIS	Rank
1	Total abandonment	4.96	1st
2	Damage company reputation	4.90	2nd
3	Poor quality of end product	4.87	3rd
4	Frequent design changes	4.71	4th
5	Loss of productivity and efficiency	4.44	5th
6	Repair / Reworks	4.40	6th
7	Periodic changes in the scope of the project	4.15	7th
8	Regular and prompt order of materials	4.13	8th
9	Litigation	4.02	9th
10	Delays in reaching material at the site	4.00	10th
11	Arbitration	3.90	11th
12	Delays in reaching plant and machinery at the site	3.52	12th
13	Lack of willing Project managers and Skilled labour Deficiency	3.50	13th
14	Disputes	3.33	14th
15	Regular payment for plant higher and acquisition	3.31	15th
16	Timely completion of projects	3.29	16th

Source: Researcher's Data Analysis (2021)

Table 3 revealed sixteen (16) effects of factors influencing performance on a construction project. Total abandonment, damage company's reputation and poor quality of the end product were ranked the most significant effect (MIS = 4.96, 4.90 and 4.87). the rest were significant and fairly significant. This finding agreed with the research result undertaken by Isah (2019) which also identified timely completion of projects as the major effect of cash flow on contractors' performance.

Results on Strategies for Improving the Performance of Construction Projects

Strategies for improving the performance of construction projects were identified and, in a quest to analyze them the Mean Item Score was employed to rank the eighteen (18) factors identified as shown in Table 4.

Table 4: Strategies for Improving the Performance of Construction Projects

S/N	Strategies for Improving the Performance of Construction Projects	MIS	Rank
1	Having appropriate planning	4.94	1st
2	Plan cash flow by utilizing progress payment	4.90	2nd
3	Understanding peoples' requirements and needs	4.83	3rd
4	Good leadership	4.77	4th
5	Contractors' progress payment on time	4.77	4th
6	Effective contractors and workers' relationship	4.54	6th
7	Good communication	4.29	7th
8	Comprehensive analysis	4.12	8th
9	Minimize change orders during construction to avoid delays	4.08	9th

10	Control and administrative system	4.04	10th
11	Use of technology when giving information	4.02	11th
12	Training of workers	3.90	12th
13	Full cooperation of consultants to contractors or clients	3.88	13th
14	Timely documentation	3.88	13th
15	Monitoring and recording of materials supplied	3.88	13th
16	Keeping track of materials	3.75	16th
17	Reward regularly	3.75	16th
18	Stakeholder relationship	3.50	18th

Source: Researcher's Data Analysis (2021)

From Table 4, eighteen (18) effective strategies have been identified as strategies for improving the performance of construction projects. These strategies range from having appropriate planning (MIS = 4.94) which is very effective and Stakeholder relationship (MIS = 3.50) which is fairly effective. This finding agreed with the research finding of Olanipekun *et al.* (2017) which also identified having appropriate planning as the most effective strategy for improving the performance of construction projects.

Conclusion

Construction projects proceed to meet the targeted cost, schedule and achieved the quality standard set out. However, Construction performance embraces client satisfaction, time performance, cost performance, construction quality and sustainable development. This study has brought into focus the determinant factors of building construction project performance. After a series of extensive literature reviews and findings, it was concluded that there are three (3) most important factors affecting construction project performance and the major one is improper planning and management, as such, effective planning and management should always be put in place. Total abandonment of projects is the most significant effect of factors influencing performance on construction projects. Having appropriate planning is the most effective strategy for improving the performance of construction projects. It can be finally concluded that the determinant factors of building construction project performance in Birnin Kebbi are significant.

Recommendations

- Professionals employed at the design stage of construction should take note of these factors influencing project performance to achieve successful project outcomes.
- The project budget should be planned by the stakeholders based on available resources the client is ready to spend on design and construction to reduce project abandonment and contract frustration by the client.
- In a period of the low-profit era, clients (government) should embrace the use of best value contributing factors (BVC) in contractor selection to reduce client subjective biases in selecting an experienced contractor.

Area for Further Study

1. An empirical study should be conducted to identify the relationship between construction project success and performance indicators in public construction projects.

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