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FACTORS AFFECTING COST PERFORMANCE OF CONSTRUCTION PROJECTS IN ABUJA, NIGERIA

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ABSTRACT

Purpose: Cost deviation from initial cost plan, has been prevalent in construction projects and the issue calls for serious concern. It is against this background that this study made attempt to investigate factors responsible for this phenomenon despite past research efforts.
Design/methodology/approach: Purposive sampling method was used to collect data from primary source consisting of structured questionnaire designed on Likert scale in rating of 1 to 5. The field survey was carried out with 80 questionnaire distributed to the professionals handling public construction building projects in Abuja and a response rate of 68 questionnaire returned was used for the analysis. The data collected was analysed using statistical package (SPSS).
Findings: It was discovered from the data analysis that delayed payments to contractors, inflation, fraudulent practices, and inadequate financial planning are top critical factors contributing to poor cost performance. In addition, mobilisation of financial resources in advance, proper and realistic planning, efficient estimation process, training on value management, change management and procurement management are also crucial to minimise poor cost performance in construction industry.
Originality/value: The study concludes with recommendations that payments should be made to contractors without delay, decision making on projects should always be fast tracked, establishment of preventive measures against unethical practices should be in place. Management should focus more on human resource related issues and adequate planning using modern technology these could serve as mitigating measures for minimising poor cost performance in construction projects.

Keywords: Causes; construction projects; cost performance; mitigation measures.

1. INTRODUCTION

One of the important criteria for project success is project completion within budget time and the satisfaction of clients. The construction industry contributes to the overall economy of our nation, but it is plagued by cost overrun due to various factors. Achieving a steady cost projection on construction projects had been an issue of serious concern, both to the client and project contractors. Cost deviation from initial Cost plan, had been prevalent on Construction sites. Iheme and Chiagorom (2018) noted that the construction industry is of crucial importance to the economy and national development

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of a nation and that there cannot be much progress in national development without the provision of basic infrastructure and amenities. The Construction sector is a crucial factor of competitiveness in the economy, it provides the infrastructure and buildings on which every other sectors rely on (Nasiru *et al*., 2012).

Improving construction efficiency by means of cost effectiveness and timeliness would certainly contribute to cost saving for the country as a whole. One of the important criteria for project success is project completion within budget, time and the satisfaction of the client's requirement. In the construction industry, completing a project within budget is even more critical, as companies work on narrow margins. Completing a project within budget is a complex task, even with various cost control software and techniques, and cost overruns in construction projects are not uncommon all over the world (Olawale & Sun, 2010). Kasimu (2012) stated that construction cost overrun is a universal reality not only in Nigeria, but in all countries across the globe. Cost overruns, whether they are due to delay or estimation errors or any other factors, do not just happen; they are caused and measures can also be put in place to minimise the problem and reduce the impact significantly on the economy of all countries.

Mamman and Omozokpia (2014) opined that the overall success of a project is determined to a large extent by the proper management of the resources which are considered as an essential aspect of project implementations. It was further asserted that if the resources are adequately used and controlled, issues that related to cost overrun would not arise. Cost escalation in projects varies from one project to another and it has adverse effects on clients and contractors, increased costs, loss of productivity, and contract termination (Nasiru *et al*., 2012). However, with the rapid increase in construction failures, this research becomes necessary so as to have a basis for investigating the causes and factors contributing to cost overruns on construction projects in Nigeria. Several researches had been conducted on factors affecting project performance in construction industry, only a few have addressed the issue of cost overruns in recent time in a developing economy like Nigeria This study builds on the vast research works in order to identify a list of factors contributing to cost overruns in public construction projects and more importantly propose a mitigation strategy that could serve as mitigating measures to minimise the problems of cost overrun in public construction projects.

2. REVIEW OF RELATED LITERATURE

2.1. Construction industry

Construction industry is a major index factor in the social and political integration of the society and ranks as one of the major budgetary areas of developing economies. The construction industry has been proven to stimulate rapid economic growth of any nation and there cannot be much progress in national development without the provision of basic infrastructure. (Iheme *et al*., 2015). This sector is a crucial factor of competitiveness in the economy as it provides the infrastructure and buildings on which every other sectors relies on. Construction is considered unique in that it can stimulate the growth of other industrial sectors. Nasiru *et al*. (2012) noted that one of the most dynamic and responsive industrial sector is that of construction. It is an industry in which the output is usually visible, which gives it political appeal, as well as having strong backward and forward linkages with other industries, which makes it a powerful tool for economic manipulation. Construction

Industries are desired mainly for the services which they help to create as most business, social, religious, economic, and industrial activities, operate on her structural base (Iheme *et al*., 2018).

2.2. Factors affecting cost performance

In construction industry, it is important to have control on cost performance of projects to ensure that the construction cost is within the budget. Various researches have been conducted all over the world to investigate factors influencing construction cost overruns. For instance, Olawale and Sun (2010) discovered that top five ranked causes of cost overruns in UK are design changes, risk and uncertainty associated with projects, inaccurate evaluation of projects, time/duration, non-performance of subcontractors, nominated suppliers and complexity of works. Memon, Rahman and Aziz (2011) conducted a research in Malaysia and concluded that top five (5) factors causing cost overruns to be: poor design and delays in design, unrealistic contract duration, lack of experience, late delivery of materials/ equipment and lack of good relationship between the work force.

Other critical factors causing cost overruns as identified by Muralidran, (2018) in United Arab Emirates are: poor productivity, insufficient early planning, lack of motivation, lack of training, clients' financial difficulties, rework, and error in estimating. Other factors are, human resource management, time management, planning, procurement, quality, estimation, change Management, and Project finance. Other critical factors affecting cost performance in Nigeria as identified by Nasiru *et al*. (2012); Malumfashi (2012) and Hellen (2016) are contractors' inexperience, inadequate planning, inflation, incessant variation order and change in project design. Causes of cost overruns are mostly based on the actions and inactions of the project members whether the project is large or not.

Ramanathan, Narayenan and Idrus (2012) after reviewing factors of overruns, found that it was difficult to generalise the root cause of overruns as each study had a unique approach and unique rankings of the causes. They also found, for instance, that some factor that were found to be contributing to cost overruns in the past, have be addressed after some years. However, they noted that the factors appeared to be country, location and project specific. In the Middle East, study revealed that time and cost overruns were viewed to be mostly caused by the client through design changes, late payments to the contractor and delays in decision making. The contractor was seen to contribute through inadequate planning and scheduling, poor supervision and site management and poor productivity (Saleh, 2009; Ramanathan *et al*., 2012).

2.3. Effects of poor cost performance

Nigeria as a country has witnessed a substantial increase in the number of stalled projects due to inappropriate project organisation structures and ineffective leadership. There is evidence that the performance of the construction in Nigeria is poor as time and cost performance of projects are to the extent that over 70% of the projects initiated are likely to escalate with time with a magnitude of over 50% and over 50% of the projects likely to escalate in cost with a magnitude of over 20% (Nyangilo, 2012).

Cost overruns when nor addressed over time, always have significant effect on the economy of every nation. For instance, Ayodele (2011) discovered that there are about 4000 uncompleted or abandoned project belonging to the Federal Government of Nigeria with an estimated cost of above N300 billion which may take up to 30 years to complete at the execution pace and capacity of the present Government, because this issue has been left

without adequate attention for too long which is now having a multiplier effect on the construction industry in particular and the national economy as a whole.

2.4. Mitigating measures for poor cost performance

There are several mitigating measures that could minimise cost overruns in construction projects. Olawale and Sun (2010), revealed that the application of value engineering concept with the elimination or modification of anything that can add to project cost, without adding to the function would improve the overall project cost. This could be through cost investigation, cost planning and cost benefit analysis. Mitigating measures against cost overruns as suggested by Doloi (2013), are: mobilisation of resources by client on time, organisation of cost control workshops, proper procurement planning, proper cost estimation, incentive scheme for motivational purposes and establishment of cost monitoring scheme. Additional mitigating measure discovered is the provision of comprehensive error free designs to avoid misinterpretation of designs by contractors caused by missing drawing details (Ayodele, 2011). Muralidran (2018) discovered that measures such as human resource Management, procurement management, value management, accurate estimation, risk management, quality management and engagement of experience professionals could minimise cost overruns in construction. Additional mitigating measures against cost overruns are: making project team to endorse clauses that disallow unnecessary changes while the project is underway, project tracking to discern early signal of cost overrun and effective human resource management through motivation.

3. RESEARCH METHODOLOGY

Field survey was carried out with 80 questionnaire distributed to professionals handling public building construction projects in Abuja and 68 were returned and this was used for the analysis of data collected from construction professionals. The primary data were collected with the aid of structured questionnaire designed on Likert Scale of 1to 5 rating scale, using mean score to rank the factors discovered. Very relevant was rated 5, relevant was rated 4, just relevant was rated 3, irrelevant was rated 2 and very irrelevant was rated as 1. Secondary data were collected with the aid of Journal articles and past research works. Simple severity index was used in determining the extent to which the variables were accorded and their order of priority. Simple percentages and severity index were used as analytical tool of the generated data. SPSS (Statistical Packages for Social Science Students) was used in determining pattern of variables.

4. RESULTS AND DISCUSSION OF FINDINGS

The results from the data analysis and the discussion of findings are presented in this section.

4.1. Results

Results emanating from the analysis performed are presented here. Table 1 shows the professional affiliation of the respondents.

Table 1: Professionals in small and medium construction firms

S/N	Respondents	Small Frequency	Percentage	Medium Frequency	Percentage
1	Architect	7	17.00	5	18.00
2	Builders	10	25.00	6	21.00
3	Civil Engineers	14	35.00	9	32.00
4	Quantity Surveyor	5	13.00	5	18.00
5	Project Manager	4	10.00	3	11.00
	Total	40	100	28	100

The professional affiliation of various respondents as presented in Table 1 shows that 17% of the respondents in small construction firms are Architects, 25% are Builders, 35% are Civil Engineers, 13% are Quantity Surveyors while Project Managers are 10%. For medium construction firms, the result as shown in Table depicts that 18% of the respondents are Architects, 21% are Builders, 32% are Civil Engineers, 18% are Quantity Surveyors while Project Managers are 11%. The implication of this result shows that the targeted respondents are professionals practising within the built environment.

Table 2: Causes of poor cost performance

S/N	Items	Small Firms		Medium Firms	
		Mean	Rank	Mean	Rank
1	Delay in payment to contractors	4.16	1st	4.60	1st
2	Fraudulent Practices	4.01	4th	4.54	2nd
3	Inadequate financial planning	4.06	3rd	4.50	3rd
4	Inflation	4.10	2nd	4.46	4th
5	Non-performance of sub-contractors and nominated suppliers	3.91	5th	4.37	5th
6	Change in project design	3.71	12th	4.32	8th
7	Lack of value management	3.69	13th	4.28	12th
8	Error in estimating cost of materials	3.78	9th	4.34	6th
9	Unrealistic contract cost	3.74	11th	4.29	11th
10	Inadequate training on cost control techniques	3.59	14th	4.32	8th
11	Lack of proper human resource management	3.90	6th	4.19	14th
12	Engagement of inexperience contractor	3.75	10th	4.21	13th
13	Lack of proper project planning and control	3.81	7th	4.32	8th
14	Inadequate risk management	3.59	14th	4.25	1th
15	Uncoordinated design change management	3.79	8th	4.02	15th

In order to explore the causes of poor cost performance of construction projects, the respondents belonging to both the small and medium construction firms were asked to rank already identified causes from the literature. As such, Table 2 depicts the causes of poor cost performance that are considered for construction projects by organisations as perceived by various construction professionals. It can be seen that even though all the causes of poor cost performance considered have been highly rated by all construction the professionals, delay in payment to contractors is perceived as most important factor to small and medium firms; while second most paramount cause of poor cost performance to professionals in medium firms and small firms are, fraudulent practices and inflation respectively.

Table 3: Mitigating measures for poor cost performance

S/N	Items	Small firms		Medium Firms	
		Mean	Rank	Mean	Rank
1	Mobilisation of financial resources in advance	4.31	1st	4.53	1st
2	Proper and realistic procurement planning	4.25	2nd	4.47	2nd
3	Inflation control mechanism	4.21	4th	4.43	3rd
4	Productivity and cost control training workshops	4.18	5th	4.25	8th
5	Motivational incentive scheme for cost control	4.06	7th	4.28	7th
6	Proper and realist cost estimating	4.03	8th	4.35	5th
7	Stability in Government	3.97	10th	4.19	12th
8	Monitoring against fraudulent practices	4.12	6th	4.24	10th
9	Monitoring against fraudulent practices	4.22	3rd	4.22	11th
10	Sanctions against contractors for non-performance	3.88	12th	4.38	4th
11	Engagement of experience contractor	3.75	14th	4.07	15th
12	Project planning and control	3.91	11th	4.13	14th
13	Human resource management	3.88	12th	4.25	8th
14	Value management	3.81	15th	4.18	13th
15	Project design change management	4.01	9th	4.34	6th

Table 3 indicates the factors for mitigating poor cost performance as perceived by small and medium firms professional. Mobilisation of financial resources in advance was ranked first, while proper and realistic planning was ranked second by both small and medium firms. Monitoring against fraudulent practices was ranked third by small firms while inflation control mechanism was ranked third by medium firms.

Table 4: Effects of poor cost performance

S/N	Items	Mean	Rank
1	Adversarial relations among stakeholder	3.74	5
2	Bad reputation and inability to secure project finance	3.81	1
3	Budget shortfall for project owners	3.78	3
4	Liability of companies due to bankruptcy	3.75	4
5	Project abandonment	3.79	2
6	Supplementary agreement	3.71	6
7	Tying down of clients capital	3.69	7
8	Under-utilisation of manpower resources	3.59	8

Table 4 shows the effects of poor cost performance. Bad reputation and inability to secure project finance was ranked first with mean of 3.81 by all the professionals. It could lead to project abandonment with mean of 3.79 was ranked second, it could lead to budget shortfall for project owners with mean of 3.78 was ranked third.

Table 5: Benefits of effective cost performance

S/N	Benefits of Effective Cost Performance	Percentage
I	Giving clients value for capital invested	80%
Ii	Minimising Company insolvency problems	70%
Iii	Reduction of bad debt or bankruptcy issues	65%
Iv	Improvement of human resource productivity	55%
V	Improvement in project cost, and quality performance	93%
Vi	Minimise projects abandonment	90%
vii	Optimisation of plants and equipment utilisation for the projects.	60%

The benefits of minimising cost overruns in construction projects from the respondents are; It could lead to improvement in project cost and quality performance (93%), project abandonment could be minimised drastically (90%), and it could promote the concept of client having value for his investment (80%). Also, there is likelihood of reduction in construction project cost, resulting from non - payments for unproductive time (70%). The tendency of firms going bankrupt as a result of bad debt could also be minimised (65%).

4.2. Discussion of findings

Delay payment to contractors was indicated by all the respondents in small and medium firms as the main factor responsible for cost overrun on the project they were engaged at. This factor could result in exceeding initial project budget and which could culminate in poor cost performance. This would in turn force the owner of facilities being constructed to seek for an additional funding to pay the extra cost. The respondents agreed that proper financial and material procurement planning is also critical to reduce the effect on project cost and prevent cost overrun. This is in conformity with Muralidran (2018) that Planning is often pivotal to the success of construction operations. For successful execution of project works, various financial planning techniques that could be applied are: short-term planning, medium-term planning and long term planning.

Mitigating measures to poor cost performance as suggested by the respondents in small and medium firms are mobilisation of financial resources in advance, proper and realistic procurement planning, value management, proper and realist cost estimating, sanctions against contractors for non-performance, monitoring against fraudulent practices and establishment of Inflation control mechanism. The responses from this study is in conformation with the work of Doloi (2013) that mobilisation of resources by client on time, organisation of cost control workshops, proper procurement planning, proper cost estimation, incentive scheme for motivational purposes and establishment of cost monitoring scheme is crucial in promoting effective cost performance.

Effects of poor cost performance in projects as perceived by all the respondents are; it could lead to Bad reputation and inability to secure project finance. It could lead to project abandonment and it could lead to budget shortfall for project owners. The effects of poor cost performance could be devastating to the project participants. The benefits of minimising cost overruns in construction projects as revealed by the respondents could lead to improvement in project cost and quality performance. Project abandonment could be minimised drastically and it could promote the concept of client having value for his investment. Also, there is likelihood of reduction in payments for unproductive time which has the tendency to minimise the incidence of construction firms going bankrupt as a result financial problems.

5. CONCLUSION AND RECOMMENDATIONS

Based on the findings, it could be concluded that factors affecting cost performance construction projects in Abuja Nigeria construction industry have direct performance on project delivery. The need to put in place sound construction management practices to minimise poor cost performance cannot be over emphasised. Factors identified in this study, as major factors contributing to cost performance based on the respondents' opinion in small medium firms are: delay in payment to contractors, fraudulent Practices, Inadequate financial planning, and inflation. Other factors are: unrealistic contract cost,

lack of adequate precaution against fraudulent practices, and inadequate sanctions against contractors for non-performance.

The study, therefore, make recommendations that measures such as: mobilization of financial resources in advance, monitoring against fraudulent practices, proper and realistic procurement planning, establishment of Inflation control mechanism, proper and realist cost estimating, value management and sanctions against contractors for non-performance, should be giving adequate priority.

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