



Minimizing Cost Overruns in Construction Projects in Nigeria

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ABSTRACT

One of the important criteria for project success is project completion within budget time and the satisfaction of clients. 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 research made attempt to investigate factors that are responsible for this phenomenon despite past research efforts. This is with a view to suggest possible mitigating measures against this menace. 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). 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 cost overruns. 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 cost overruns in construction industry. 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 could serve as mitigating measures for minimising cost overruns in public building construction projects.

Keywords: Construction management, Cost Overruns, Causes, Mitigation measures.

INTRODUCTION

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. Ihome and Chiagorom, (2018), noted that The Construction Industry is of crucial importance to the economy and national development 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.

LITERATURE REVIEW

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).

Causes of Cost Overruns

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 contractor's 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, Narayanan 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 and Ramanathan, et a/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 ₦300 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.

Mitigating Measures for cost overruns

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 Doloj, (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.

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 1 to 5 rating scale, using relative importance index in ranking the factors discovered. Very important was rated 5, important was rated 4, just important was rated 3, minor important was rated 2 and not important 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. The factors were ranked in order of their degree of severity.

Presentation and Analysis of Data

The background information about the respondent is as presented in the table below.

Table 1 Profession of Respondent

S/N	Professional cadre of Respondents	No of Respondents	Percentage
1	Architect	19	28
2	Builders	17	25
3	Civil Engineers	15	22
4	Quantity Surveyor	10	15
5	Project Manager	7	10
	Total	68	100

The professional cadre of various professionals constituting the respondents is presented in Table 1 above 25% of the respondents are Builders, 28% Architect, are 28% Quantity Surveyors are 15%, Civil Engineers are 22%. While Project Managers are 10%

Table 2 Respondents Years of Experience

Years of Experience	Respondents population	Percentage
1-5yrs	16	24
5-10yrs	19	28
Above 10yrs	33	48
Total	68	100



The Respondents year of Professional experience is illustrated in Table 2. With this 28% belong to the category of respondents having 5-10yrs experience, 24% of 1-5yrs experience, while 48% belong to category with above 10yrs experience.

Table 3 Period of Cost Overrun

S/N	No of Years	No of Respondents	Percentage
1	0-1Yrs	28	41
2	1-2 years	24	35
3	2-3years	11	16
4	Above 3 years	5	8
	Total	68	100

In Table 3 the Period of occurrence of cost overrun on site is detailed out here. Cost overrun that spanned below 0-1years was experienced by 41% of the respondents, 2-3years, experienced by 16%, 1-2years by 35% respondents while 8 of the respondents experienced cost overrun that spanned up to 3years period.

Table 4. Cost overrun factors

s/n	Items	Very important	Important	Just Important	Minor Important	Not important	Severity index	Rank
1	Delay in payment to contractors	44	21	43	0	0	0.92	1 st
2	Fraudulent Practices	43	19	6	0	0	0.91	2 nd
3	Inadequate financial planning	42	18	8	0	0	0.9	3 rd
4	Inflation	41	18	8	1	1	0.89	4 th
5	Non-performance of sub-contractors and nominated suppliers	40	17	7	13	1	0.87	5 th
6	Change in project design	40	17	46	3	2	0.86	6 th
7	Lack of value	40	15	7	4	1	0.86	6 th



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8	Error in estimating cost of materials	39	18	7	3	1	0.87	7 th
9	Unrealistic contract cost	39	16	9	2	2	0.86	6 th
10	Inadequate training on cost control techniques	38	16	13	0	1	0.86	6 th
11	Lack of proper human resource managem nt	38	15	10	0	2	0.85	8 th
12	Engagem nt of inexperie nce contractor	37	16	09	4	2	0.84	9 th
13	Lack of proper project planning and control	38	16	12	2	0	0.86	6 th
14	Inadequate risk managem nt	31	24	12	1	0	0.85	8 th
15	Uncoordin ated design change managem nt	30	19	9	0	0	0.83	10 th

Factors contributing to cost overruns are presented in table 4 above, with various responses collected from the respondents. Based on the respondent, delay in payment to contractors, with relative important index of 0.92 was ranked 1st (first) and was indicated by the respondents as the main factor responsible for cost overruns on the project they were



engaged at. Fraudulent Practices was ranked 2nd with RII of 0.91. Inadequate financial planning which was ranked 3rd, with RII of 0.9, while inflation was ranked 4th (fourth) with RII of 0.89 respectively. Other factors contributing to cost overruns in order of importance as ranked by the respondents are; non - performance of subcontractors, (0.87), error in estimating cost of materials, (0.87), unrealistic contract cost, (0.86), and inadequate training on cost control techniques (0.86)

Mitigating Measures

s/n	Items	Very important	Important	Just Important	Minor Important	Not important	RII	Rank
1	Mobilization of financial resources in advance	39	26	3	0	0	0.91	1 st
2	Proper and realistic procurement planning	38	24	6	0	0	0.89	2 nd
3	Inflation control mechanism	37	23	8	0	0	0.87	4 th
4	Productivity and cost control training workshops	36	23	8	1	1	0.89	2 nd
5	Motivational incentive scheme for cost control	35	22	7	13	1	0.91	1 st
6	Proper and realist cost estimating	35	22	6	3	2	0.85	5 th
7	Stability in Government	35	20	7	4	1	0.83	7 th
8	Monitoring against fraudulent practices	34	25	7	3	1	0.88	3 rd
9	Monitoring against fraudulent practices	34	21	9	2	2	0.84	6 th
10	Sanctions against contractors for non-performance	33	21	13	0	1	0.85	5 th



11	Engagement of experience contractor	33	20	10	0	2	0.81	8 th
12	Project planning and control	32	21	09	4	2	0.72	9 th
13	Human resource management	33	21	12	2	0	0.85	5 th
14	Value management	26	29	12	1	0	0.84	6 th
15	Project design change management	25	34	9	0	0	0.85	5 th

Mitigating measures to cost overruns are presented in table 5 above, with various responses collected from the respondents. Based on the respondents' rating, Mobilization of financial resources in advance with relative importance index of 0.91 was ranked 1st. Proper and realistic procurement planning 0.89 was ranked 2nd. Monitoring against fraudulent practices 0.88 was ranked 3rd. Inflation control mechanism 0.87 was ranked 4th. Proper and realist cost estimating 0.87 5th. Value management 0.84 was ranked 6th.

Table Benefits of Minimising Cost Overruns.

S/n	Benefits of Minimising Cost overrun.	Percentage
I	Giving clients value for capital invested	80%
li	Minimising Company insolvency problems	70%
lii	Reduction of bad debt or bankruptcy issues	65%
lv	Improvement of human resource productivity	55%
V	Improvement in Cost and quality performance project cost, payments for idle and	93%
Vi	Minimise Projects abandonment	90%
vii	U 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%).

Findings and Discussion

Delay payment to contractors was indicated by the respondents 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 cost overrun. 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 cost overruns as suggested by the respondents are Mobilization 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 Doloji, (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 minimising cost overruns. 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.

CONCLUSION AND RECOMMENDATIONS

The need to put in place sound construction management practices to minimise cost overruns cannot be over emphasised. Factors identified in this study, are major factors contributing to cost overruns based on the respondents' opinion and they 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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