

Public Construction Projects in Cape Coast Metropolis

Benjamin Boahene Ankoma, Zakari Mustapha* and Papa Kojo Annan

Cape Coast Technical University, School of Built and Natural Environment, Department of Construction Technology and Management, P. Box DL. 50, Cape Coast, Ghana

***Corresponding Author:** Zakari Mustapha, Cape Coast Technical University, School of Built and Natural Environment, Department of Construction Technology and Management, P. Box DL. 50, Cape Coast, Ghana.

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Abstract

Construction in Cape Coast Metropolis has been impacted by the cost increase of public building construction projects in Ghana. The goal of this study was to evaluate how well Cape Coast Metropolitan Assembly (C.C.M.A.) construction projects performed in terms of cost. The study used a qualitative approach to gather its data. During the fieldwork period, forty (40) structured questionnaires were given to contractors working on C.C.M.A. projects. The data analysis was done using the Statistics Package for Social Sciences (SPSS), and the results were displayed using relative index ranking and descriptive statistics. The survey results show that the main causes of cost overruns in projects within the C.C.M.A. were variations in material prices, differences in currency exchange rates, high machinery costs, inaccurate or inadequate estimates of the original cost, and frequent variations or change orders. The study makes the following recommendations: projects should have an adequate scope, effective project costing and finance, and qualified staff should be used in the administration of the projects.

Keyword: Cost of material; budget escalation; high cost of material; labour shortage; material shortage

Introduction

The building construction industry is an important contributor to the national economy of any nation as its output governs both the rate and the quality of construction work is necessary (Carole Veitch, 2017). Akomah (2015) was of the view that the major factor affecting contractor performance is cash flow and Muhammad (2015) revealed that variation occurs in all type of project was the major factor affecting the performance of contractors. Adams (2015) posited that during project execution, contingency funds are often inappropriately used to cover project overruns, instead of being applied to and available for their intended purpose. Abandonment of projects in Ghana has been attributed to the implementation of government projects and programmes, and the administration of the public sector projects (Damoah and Akwei, 20217). Tejale (2015) sited several factors (material shortage, labour shortage, delay in material and equipment delivery at site, unavailability of competent personnel, poor productivity of labour, delay in progressive payment, poor construction adopted by constructor, fluctuation of material prices, poor communication and poor coordination among the client, consultant and constructor) as the factors contributing to project cost escalation in Ghana. Another issue that leads to delays in regulatory approvals is the multiplicity of approval requirements from Central, State and local Government (Markenson, 2016). Corruption affects the quality of the project starting from the project preparation and it continues during its implementation with major acts of corruption (Wells, 2014). The goal of this study was to evaluate how well Cape Coast Metropolitan Assembly (C.C.M.A.) construction projects performed in terms of cost.

Public Building Projects

Delay in approval of land acquisition, inadequate planning by constructor, delay in forest clearance, change in scope of project work, law and order situation problem, late delivery of equipment and construction material at site, fund constraints by government party, inflation in material prices are serious issues leading to cost escalation in the construction industry (Salunkhe, 2014). Ejaz et al. (2013) posited that any project that is completed within the estimated cost and meet the specified quality standards is considered as successful project. Cantarelli (2013) investigated the causes of cost overruns in construction projects by literature review and categorize them into four main sections for cost escalation as technical, economic, psychological and political. Alaryan (2014) posits that error as unintended deviations from correct and acceptable practice that are avoidable and it entails different meanings and usages depending on how it is conceptualized. Memon and Rahman (2014) highlighted that cost escalation is still a major issue in construction projects resulting in additional burden to all related stakeholders. The definition of cost escalation provided as by Flyvbjerg (2018) is “cost overrun is the amount by which actual cost exceeds estimated cost, with cost measured in the local currency, constant prices and against a consistent baseline”. Gillanders (2014) shows that regions with higher corruption than the national average tend to have worse infrastructure than others. Van de Graaf (2014) demonstrate that corruption can be a source of project failure, especially in highly corrupt countries. Corruption is one of the major impediments to the development of emerging countries (Loosemore, 2015). Akbar (2014) posited that corruption might be eradicated by enhancing education and with cultural changes leading to a better government which should be capable of producing good policies to handle the corruption issue. Corruption affects projects and megaprojects performance leading to the delivery of works with limited social benefit, poor economic returns and over-cost. Transparency International (2015) define petty corruption as the everyday abuse of entrusted power by low- and mid-level public officials in their interactions with ordinary citizens; “grand corruption” refers to acts of corruption committed by relevant institutions such as governments and courts. A sub-category called “political corruption” refers to the manipulation of policies, institutions and procedural rules in the allocation of finances, or other resources, perpetrated by policy-makers. The Anti-Corruption Resource Centre (2015) classifies corruption according to the frequency of the phenomenon: “sporadic corruption” is linked to occasional opportunity; “systemic corruption” is an integrated and essential aspect of the economic, social and political systems. These acts are divided into three phases: pre-qualification & tender, project execution, and dispute resolution. Corruption is one of the key issues for public policies and one of the major impediments to the development of emerging countries (Loosemore, 2015).

Methodology

This section describes the procedures used in collecting data from various sources for the study. Quantitative approach method of data collection was used in the study (Bryman and Bell, 2015). The population comprised of projects under ‘united projects’ in Cape Coast Metropolis made up of Kotokuraba market, classroom/lecture hall and dormitory in the various education sectors during the study period. A list of forty (40) registered contractors under the classification of Building and Civil Engineering Works, Grade 1 and 2 (D1/K2 and D2/K2) (Ministry of Works and Housing (MWH) and Ministry of Roads and Highways (MRH) was received from the C.C.M.A development office. Purposive sampling technique was used to minimize bias in the sample selection process to achieve a sample size of five (5) personnel from each firm (Taherdoost 2016). The selected personnel for the study were sales officers, quantity surveyors, site supervisors and site engineers who were involved in the day-to-day activities of the construction firms. A 5-point ranking system, using the ‘relative importance index (RII) was utilized to obtain the selected factors from literature review for the study. The relative importance was used to determine the professional’s perception of the relative importance of the cost escalation of public building projects and its influence on housing development in Cape Coast Metropolis. Microsoft Excel was used in the analyzing and the RII five-point scale was adopted as follows: Relative Importance Index (RII) = $\frac{\sum W}{A \times N}$

Where ‘W’ is the weight given to each factor by the respondent and ranges from 1 to 5

A’ is the highest weight (5)

‘N’ is the total number of respondents (40).

$$W = \Sigma [(f_1 \times n_1) + (f_2 \times n_2) + (f_3 \times n_3) + \dots + (f_n \times n_n)]$$

Where f_n = score ranking, n_n = corresponding number of responses

Findings

This section presents the findings of the survey conducted.

Figure 1 shows that majority (82%) of the respondents were males and the rest were females.

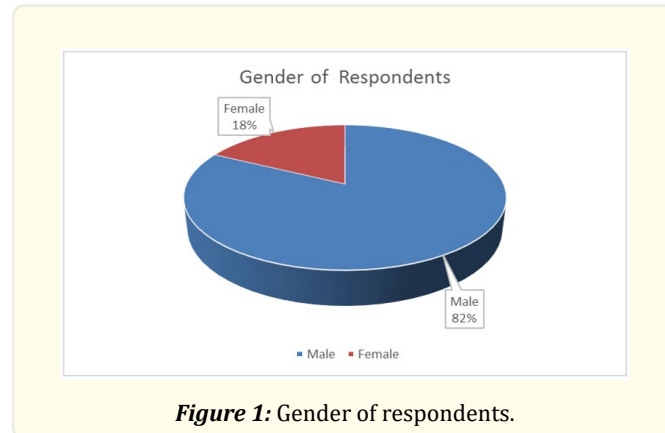
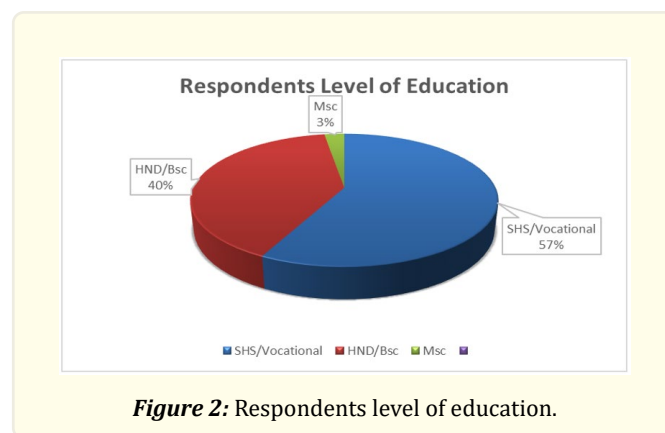


Figure 2 shows that majority (57%) of the respondents had SHS/vocational certificates and the least (3%) of the respondents had HND/ BSc certificate.



Majority (60%) of the respondents were sales officers in their organisations and had spent between 1- 4 years, with age range of 25-30 years. This was followed by respondents who had spent 5-10years with age range of 31-36years. The least (5%) of the respondents had spent over 21years with age range of 37-41 years. Site engineers and quantity surveyors were few in the organisations.

Table 1 shows that design change in construction was ranked first (1st) by the respondents as the most critical factors responsible for the cost escalation of building projects with RII value of 0.785. This was followed by delay in design approval which was ranked second (2nd) by the respondents as the most critical factors responsible for the cost escalation of building projects with RII value of 0.780. Conflict of disputes of construction work was the least among the six (6) factors responsible for cost escalation of public building project with RII value of 0.750.

<i>Factors responsible for cost escalation of public building project</i>	<i>Scale</i>					<i>W</i>	<i>RII</i>	<i>A*N</i>	<i>Rank</i>
	<i>5</i>	<i>4</i>	<i>3</i>	<i>2</i>	<i>1</i>				
Design change	17	9	10	2	2	157	0.785	200	1 st
Delay in design approval	20	7	5	5	3	156	0.780	200	2 nd
Poor labour productivity	11	17	9	2	1	155	0.775	200	3 rd
Poor initial cost estimates	13	13	10	3	1	154	0.770	200	4 th
Delay in providing instructions and response	15	11	9	3	2	154	0.770	200	4 th
Conflict of disputes of construction work	12	14	6	8	0	150	0.750	200	6 th

Weighting (W); Relative Importance Index (RII); Highest weight and total number of respondents (A*N).

Table 1: Causes of cost escalation on public building projects.

Table 2 shows that poor estimation of original cost was ranked first (1st) by the respondents as the main factor that influence cost performance of construction with RII value of 0.865. This was followed by change in project design with RII value of 0.795. This was followed by change in project design which was ranked second (2nd) by the respondents as one of the factors that influence cost performance of construction with RII value of 0.795. Force majeure was the least among the seven (7) factors responsible for factors that influence the cost performance of construction with RII value of 0.730.

<i>Factors that influence the cost performance of construction</i>	<i>Scale</i>					<i>W</i>	<i>RII</i>	<i>A*N</i>	<i>Rank</i>
	<i>5</i>	<i>4</i>	<i>3</i>	<i>2</i>	<i>1</i>				
Poor estimation of original cost	23	10	4	3	0	173	0.865	200	1 st
Change in project design	13	14	12	1	0	159	0.795	200	2 nd
Material price inflation	16	13	6	3	2	158	0.790	200	3 rd
Differentiation currency prices	13	12	12	1	2	153	0.765	200	4 th
Insufficient funds	11	15	8	4	2	149	0.745	200	5 th
Unforeseen site conditions	8	17	11	1	3	146	0.730	200	6 th
Force majeure	13	10	9	5	4	146	0.730	200	6 th

Weighting (W); Relative Importance Index (RII); Highest weight and total number of respondents (A*N).

Table 2: Various factors that influence cost performance of construction.

Table 3 shows that corruption was ranked first (1st) by the respondents as the main factor responsible for difficulties in undertaking public projects with RII value of 0.860. This was followed by abandonments of building projects and financial challenges in undertaking construction projects which were ranked second (2nd) respectively as two of the factors responsible for difficulties in undertaking public projects with RII value of 0.830 each. Unavailability and high cost of equipment and tools, and management problems were the least among the seven (7) factors responsible for difficulties in undertaking public projects with RII value of 0.730 each.

Summary of Findings

Design change in construction and delay in design approval were the most critical factors among the six factors responsible for the cost escalation of building projects. The findings. Poor estimation of original cost and change in project design were the main factors among the seven factors that influence cost performance of construction. The findings concur with findings of Salunkhe, (2014). Corruption, abandonments of building projects and financial challenges in undertaking construction projects were the major factors among the seven factors responsible for difficulties in undertaking public projects. Corruption was the main factor responsible for difficulties in undertaking public projects. The findings concur with the findings of Loosemore (2015). Abandonments of building projects and financial challenges in undertaking construction projects.

<i>Difficulties in undertaking public projects</i>	<i>Scale</i>					<i>W</i>	<i>RII</i>	<i>A*N</i>	<i>Rank</i>
	<i>5</i>	<i>4</i>	<i>3</i>	<i>2</i>	<i>1</i>				
Corruption	19	16	3	2	0	172	0.860	200	1 st
Abandonments of building projects	22	10	2	4	2	166	0.830	200	2 nd
Financial challenges in undertaking construction projects	19	11	7	1	2	166	0.830	200	2 nd
Poor communication	13	12	12	1	2	153	0.765	200	4 th
Poor site management	11	15	8	4	2	149	0.745	200	5 th
Unavailability and High Cost of Equipment and Tools	8	17	11	1	3	146	0.730	200	6 th
Management Problems	13	10	9	5	4	146	0.730	200	7 th

Weighting (W); Relative Importance Index (RII); Highest weight and total number of respondents (A*N).

Table 3: Difficulties in undertaking public building project.

Conclusion and Recommendations

The goal of this study was to evaluate how well Cape Coast Metropolitan Assembly (C.C.M.A.) construction projects performed in terms of cost. Design change in construction, poor estimation of original cost and corruption were the main factors responsible for cost escalation of public building projects in Ghana. Project scope must be well defined in the initial stages of the project thereby curtailing the effect of additional or unplanned works. Detailed specifications of projects should be submitted together with the building drawings to reduce the of cost overruns and its effects on public building projects. There should be good governance and education on policy issues to eradicate corruption among officials of all organizations. High level public officials should be entrusted with the authority of handling projects in order to eradicate corruption. Cape Coast Metropolitan Assembly must secure sufficient funding in order to ensure continuous cash flow during the entire project execution.

Further Research

Further research should be conducted to cover a wider scope to see if the variables for various factors or the outcome of the research would be affected. Cost performance of construction development is recommended in order to measure accurately of construction projects performance.

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