THE INTERNATIONAL JOURNAL OF BUSINESS & MANAGEMENT

Influence of Project Cost Control on Successful Completion of County Funded Road Construction Projects in Bomet County, Kenya

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Abstract
Road construction projects in Bomet County face several challenges that hinder the successful completion. According to the Auditor General's report by the year 2018-2019, only twenty five road projects were successfully completed and more than half of the completed were sub-standard and their costs escalated. The purpose of this study was to determine the influence of project cost control on the successful completion of county funded road construction in Bomet County-Kenya. This study adopted descriptive survey research design. The target population was 98 technical employees in the given departments in Bomet County: Finance, Roads and Transport, Procurement and Monitoring and Evaluation departments. Census technique was employed since the target population was fairly small. Thus, in the study all the 98 staff were involved in the study. The study used a closed ended questionnaire to collect primary data from the respondents. The study was guided by theory of constraints. Data was entered and analyzed using SPSS statistical software. The findings of the study established that there exists a positive and statistically significant relationship (r = 0.605; p=0.000) between cost control and successful completion of county funded road construction projects in Bomet County. The study recommends that county project teams should always asses the resource requirement for individual activities. Project payments be made promptly so to avoid attraction of interest which results into cost escalation.

Keywords: Project, Project cost control, Successful completion of project, cost control

1. Background of the Study

As per Project Management Institute (2018), project is a temporary effort to create a unique product, service or result. A project has a definite start and end. Project management is effectively working to coordinate and manage individuals to work towards a common goal or objective to complete a task. Project management requires that one apply their personal knowledge, skills, tools, and techniques towards an activity in order to meet the requirements of a project assigned. Project management involves planning, scheduling, and controlling of all of the combined activities in order to ensure successful completion of project objectives. There are three concepts that are part of any project no matter what type of project is being worked on. These three concepts include project processes, project life cycles, and project management systems (Alexis, 2018).

Project cost control is a basic function in any project and it should be included in any project control system. With the increase in size and complexity of construction projects, construction managers are faced with the need to have greater understanding of all their projects economic aspects. This will enable them to implement a greater degree of control, not only over the day-to-day cost of work which they manage, but also over the wider aspects of their work in general (Attalla 2016).

Project cost control is defined as the degree to which the general conditions promote the completion of a project within the estimated budget (Bushtit and Almohawis, 2014).
A lot of project cost control means comes down to collecting and managing data, finding trends, forecasting outcomes, reporting on progress and actually actively putting learnings into practice. Without controlling for these, projects quickly become wildly ineffective and expensive.

Takim and Akintoye (2014) contends that for a project to be effective it has to please its users, is appropriate for the purpose, is free from defects, gives value for money to client, offers pleasant environment and fulfils all social obligations. Ngai, Drew & Skitmore (2011) argued that the road construction is a significant part of the economy in many countries because it interrelates with almost all fields of human endeavor. The development level of road set-up has significantly influenced production, wellbeing, and safety of both rural and urban people. The roads infrastructure connects to both local and national government centers and businesses. Nevertheless, globally road construction has attracted condemnation for inefficiencies in outcomes such as time and cost overruns, low productivity, poor quality and inadequate customer satisfaction (Chan & Ho, 2013).

2. Literature Review

2.1. Cost Control on the Successful Completion of Road Construction Projects

Charoenngam & Sriprasert (2015) conducted a study to assess cost control systems, at Thai construction organizations, they found out that the function that facilitates construction organizations to accomplish profit maximization is cost control. However, the absence of a well-established cost control system has caused failures to many Thai contractors especially during the current economic recession period. To comprehensively understand cost control systems in practice, this study theoretically assessed effectiveness as well as the deficiencies of the 'traditional' systems vis-à-vis the 'effective' systems.

In addition, by contrasting what are found in 'effective' systems but not found in 'traditional' systems, critical attributes most contributing to the systems' successfulness were identified so that the improvement steps can be suitably prioritized. The validated findings indicated remarkable contrasts between 'traditional' and 'effective' systems. Two critical aspects, including advancement of cost control framework and systematic participation of site personnel in cost control, were found to be the major differences.

Research conducted by Azis, Memon, Rahman, Latif & Nagapan (2012) focused on the objective of assessing the level of effectiveness of various cost management techniques implemented in large construction projects in South Malaysia. The study targeted 31 construction projects. The study findings revealed that the most effective technique of cost management was cash flow forecasting, tender budgeting/estimating, and an elemental cost plan. Further the study revealed that from a contractor's point of view, cost overruns were mainly caused by inaccuracy of material take off, increase in material costs and cost increase due to environmental restrictions.

Research done by Dokata (2017) investigated the cost control on the successful completion of road construction projects. The study adopted a descriptive survey research design. The researcher used stratified random sampling technique as the sampling procedure and the respondents includes architects, engineers, quality surveyors, constructors and other professionals in the Commercial Real Estate construction industry. The sample size of 175 respondents was picked using Krejcie & Morgan (1970) sample determination table out of a target population of 303 Commercial Real Estate Companies within Nairobi County registered with National Construction Authority. The study findings revealed that the fulfillment of contractual obligations, especially as regards to payment of contractor's works duly executed, or settlement of fees accounts of consultants and possession of construction site. And review of contract documents for grey areas and use of a checklist after every milestone emerged as the most suitable control tools to be used to mitigate the effects of design changes.

Murgor (2016) looked into cost overruns in power projects in Kenya; a case study of Kenya Electricity Generating Company Ltd. The research pointed on the many factors that influence or causes cost factors that impede on successful completion of projects on time, budget and quality. Factor analysis of various significant variables from the said survey, revealed eight underlying factors namely; contractor inabilities, improper project preparation, resource planning, interpretation of requirements, works definition, timeliness, Government bureaucracy, and risk allocation as having been significant contributors to overruns.

Anyanwu (2017) sought to investigate the project cost control in the Nigerian construction industry. Based on the objectives of the study, the research data was collected from construction companies in Port Harcourt Rivers State and analyzed. The findings from the analysis revealed that various management techniques especially planning have been developed. Such planning tools like the Network analysis and bar-chart have helped in the early planning of construction projects on which the application of other cost project management techniques are based. The study concluded that the rising cost of building materials nowadays and the ultimate astronomical increase in the cost of construction projects calls for adequate application of cost management principles so as to reduce or eliminate the cost of projects.
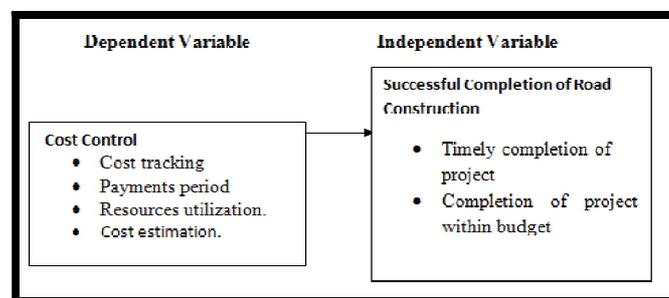

Figure 1: Conceptual Framework

3. Methodology

This study adopted descriptive survey research design. The study population consisted of technical employees in the given departments in Bomet County: Finance, Roads and Transport, Procurement and Monitoring and Evaluation departments. The unit of analysis for the study was 32 employees from the Finance department 27 employees from Roads and Transport; 22 employees from Procurement department and 17 employees from Monitoring and Evaluation department making a total of 98 employees who are directly involved in the 69 county funded road construction projects in Bomet County. Since the target population was small the researcher employed census technique

where all the 98 staff working in the Finance, Roads and Transport, Procurement and Monitoring and Evaluation departments were used in the study. The study used a closed ended questionnaire to collect primary data.

4. Results and Discussion

Descriptive Statistics for influence of Project Cost Control on the Successful Completion of County Funded Road Construction Projects.

Cost Control Statement	N	SA (%)	A (%)	N (%)	D (%)	SD (%)	Mean	Std
Project team tracks cost at every stage of the project	94	46	44	4	6	0	4.64	0.876
Project team does re-assessment of resource requirement for individual activities.	94	12	10	3	67	8	2.04	0.231
Delayed payments attract interest and this result into cost escalation	94	41	52	2	5	0	4.46	0.567
Lack of steady flow of finances will slow down progress of a road construction project	94	47	33	7	13	0	4.17	0.641
Project team has regular project budget update.	94	52	33	4	9	2	4.23	0.643
Fluctuations in material, labour and plant increases the costs of road projects	94	49	39	10	2	0	4.35	0.767
Proper utilization of resources is ensured during the project life time.	94	16	17	3	33	31	2.53	1.466

Table 1: Descriptive Statistics for Influence of Project Cost Control on the Successful Completion of County Funded Road Construction Projects

From the findings, majority (90 %) of the respondents agreed (mean = 4.64; std dev = 0.876) that project team tracks cost at every stage of the project. In addition, majority (75%) of respondents disagreed (mean =2.04; std dev = 0.231) that their project teams do re-assessment of resource requirement for individual activities. This is supported by Mathonsi and Thawala, (2012) who stated that project team should track cost and plan the necessary resources to avoid delays. Further majority (93%) of the respondents agreed (mean = 4.67; std dev = 0.567) that the delayed payments attracts interest and this result into cost escalation.Additionally, majority (80%) of respondents (mean = 4.17; std dev = 0.641) agreed that lack of steady flow of finances will slow down progress of a road construction project. This concurs with Alaghbari (2017) who indicated that from a list of thirty-one (31) factors, clients, contractors and consultants agreed that financial problems was the main factor were causing delay in construction projects in Malaysia.

From the findings, majority (85%) of the respondents (mean = 4.23; std dev = 0.643) agreed that project team has regular project budget update. The study also indicated that majority (88%) of the respondents (mean = 4.351; std dev = 0.767) agreed that Fluctuations in material, labour and plant increases the costs of road projects.

Schedule Control Statement	N	SA (%)	A (%)	N (%)	D (%)	SD (%)	Mean	Std
An effective road project meets its goals and objectives	94	52	38	7	3	0	4.11	1.030
Good quality performance makes the road construction project implementation effective	94	49	40	3	5	3	4.307	0.738
Successful completed road construction projects ensures stakeholders satisfaction	94	53	44	3	0	0	4.145	0.807
An effective road project is completed within specified budget and time	94	52	38	10	0	0	4.44	0.729

Table 2: Descriptive Statistics on Successful Completion of County Funded Road Construction Projects

The researcher sought to find out the successful completion of county funded road construction projects. The findings from the analysis presented in Table 2 indicated that the most respondents (90%) agreed that an effective road

project meets its goals and objectives. (Mean=4.11 SD=1.03). The respondents 89%) further agreed that good quality performance makes the road construction project implementation effective (mean=4.307, SD=0.738). Also, the respondents (97%) also agreed that the efficiency and effectiveness of the road construction process strongly depend on the quality of communication (mean=4.145, SD=0.807). Finally the study sought to find out whether an effective road project is completed within specified budget and time and majority (90%) were in agreement (mean=4.44, SD=0.729).The finds agree with Nwachukwu (2010) who termed a road project to be successfully completed if it passed four success test criteria i.e. the time criterion - completed on time; the cost or money criterion - completed within budget; the effectiveness criterion - completed in accordance with the original set performance and quality standards; and client's satisfaction criterion - accepted by the intended users or clients whether the client is internal or from outside the organization.

4.1. Inferential Analysis for Influence of Project Cost Control on Successful Completion of County Funded Road Construction Projects

The study sought to establish the correlation between project cost control and successful completion of county funded road construction projects. The findings of the study are as shown in Table 3

		Successful Completion of County Funded Road Construction Projects
Cost Control	Pearson Correlation	.605[*]
	Sig. (2-tailed)	.000
	N	94

Table 3: Project Cost Control and Successful Completion of County Funded Road Construction Projects
*. Correlation is significant at the 0.05 level (2-tailed)

As indicated in the Table 3, the study indicates that there was a moderate positive, and statistically significant correlation between project cost control and successful completion county funded road construction projects (r = 0.605; p=0.000). This implies that an improvement in project cost control results to successful completion County Funded Road Construction project these findings are in line with Munyoki (2016) who found that project cost influences completion of construction projects.

4.2. Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.739a	.546	.676	.64723

Table 4: Regression Model Summary
a. Predictors: (Constant), Cost Control
b. Dependent Variable: Successful Completion of County Funded Road Project

The study conducted a regression analysis to find out the strength of the relationship between independent and dependent variables as shown in the Table above. The findings show that the successful completion of county funded road project is 54.6% as described by the independent variable under this study while 45.4% is the variation due to other factors which have not been covered in this study. The study findings agrees with Attalla (2016) whose research identified four control functions that are critical to the success of reconstruction projects.

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	23.100	1	5.775	12.2872	.000a
	Residual	42.308	90	0.470		
	Total	65.408	94			

Table 5: ANOVA of the Regression Model
a. Predictors: (Constant), Cost Control
b. Dependent Variable: Successful Completion of County Funded Road Project

In the ANOVA table 4, the *F* statistic =12.2872 has been illustrated. Since the f calculated is greater than f statistic, it infers that the model is statistically significant. Therefore, there is strong evidence that the regression results are statistically significant and the variation in the results is insignificant that cannot result to much difference in case of a change in the study units (population) and therefore the model did for the data.

5. Conclusion and Recommendation

From the findings, the researcher concluded that project team has regular project budget update. Further the researcher concluded that supply of materials, labour and plant affect the costs of road construction projects. The researcher also concluded that proper utilization of resources is ensured during the project life time. Finances will slow

down progress of a road construction project. Further, the findings of the study established that there exists a positive and statistically significant relationship (r = 0.605; p=0.000) between project cost control and successful completion County Funded Road Construction project in Bomet County. This is supported by Mwawasi (2015) who found out that delayed fluctuations in material, labour and plant costs were the causes of increase in cost.

From the influence of Project Cost Control on Successful Completion County Funded Road Construction projects, the study recommends that the county project teams to always asses the resource requirement for individual activities. The finance department should ensure that project payments are made promptly so to avoid attraction of interest and this result into cost escalation. Also, it should ensure that there is a steady flow of finances. This will ensure that the progress of a road construction projects is not slowed. Fluctuations in material, labor and plant increases the costs of road projects. County officers should ensure proper utilization of resources during the project life time. This will be done by constant monitoring and evaluation of all projects.

6. Suggestions for Further Research

The researcher suggested that further studies should be conducted on effect of monitoring and evaluation on successful competition of road construction projects. Further research should be conducted on the influence of management skills on successful completion of construction projects.

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