

PROJECT BUDGET MANAGEMENT AND PERFORMANCE OF ADDIS ABABA CITY ROAD AUTHORITY CONSTRUCTION ROJECTS IN ETHIOPIA

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Abstract

This study evaluated the influence of project budget management, leadership skills, stakeholder engagement, and contract schedule adherence, on the performance of road construction projects undertaken by the Addis Ababa City Road Authority (AACRA). A mixed-method approach integrating qualitative and quantitative methods was employed. Data were collected from 62 respondents comprising AACRA staff and consulting engineers. The findings indicated strong, statistically significant correlations between project performance and budget management ($p = 0.650$, $p < 0.01$), leadership skills ($p = 0.740$, $p < 0.01$), stakeholder engagement ($p = 0.868$, $p < 0.01$), and contract management ($p = 0.926$, $p < 0.01$). However, deficiencies were noted in areas such as funding adequacy, adherence to timelines, and conflict resolution. The study concludes that addressing these gaps through improved planning, communication, and monitoring can significantly enhance project outcomes.

Keywords: Project Management, Road Construction, Budget Management, Leadership Skills, Stakeholder Engagement, Contract Management

1 Introduction

Urban infrastructure plays a critical role in economic and social development, especially in rapidly growing cities such as Addis Ababa. However, despite significant investment in road infrastructure, many road construction projects under AACRA continue to suffer from budget overruns, delays, and quality issues. This study explores how project budget management affect project performance.

2 Methodology

The study adopted a descriptive-exploratory research design. A target population of 81 was drawn from AACRA staff and consulting engineers. Stratified sampling was applied to ensure proportional representation. Data were collected via structured questionnaires and key informant interviews.

Quantitative data were analyzed using descriptive statistics and Spearman's rank correlation due to non-parametric distribution, while qualitative data were thematically analyzed.

3 Results

3.1 Project Budget Management

To gauge the budget management practices employed at AACRA, the 62 research participants were asked to rate described budget management practices as relates to road construction projects on a six-point Likert scale. A numerical descriptive summary of their responses is presented in Table 3 below, followed by a narration of the main outcomes.

TABLE 3: BUDGET MANAGEMENT PRACTICES OF AACRA

Variable:							Likert			
Budget Management Practices of AACRA	Very Poor	Poor	Fair	Good	Vary Good	Excellent	Mean	Median	Std. Dev.	$CV = \frac{\sigma}{\mu} (100)$
The possibility of meeting the proposed project budget	1	3	21	24	8	5	3.8	4.0	1.1	29%
	2%	5%	34%	39%	13%	8%				
Availability of sources of finance for the project	5	15	38	4	0	0	2.7	3.0	0.7	26%
	8%	24%	61%	6%	0%	0%				

Adequacy of financial allocation to the project	4	12	28	12	6	0	3.1	3.0	1	32%
	6%	19%	45%	19%	10%	0%				
The extent to which the budget allows for planning or quantifying a plan of action	2	4	36	15	4	1	3.3	3.0	0.9	27%
	3%	6%	58%	24%	6%	2%				
Extent to which the budget is used to control profits and operations (i.e. serves as a benchmark with which actual results can be compared to planned outcomes)	0	1	20	32	9	0	3.8	4.0	0.7	18%
	0%	2%	32%	52%	15%	0%				
Extent to which budgeting allows for allocation of resources among competing uses	0	2	36	16	8	0	3.5	3.0	0.8	23%
	0%	3%	58%	26%	13%	0%				
Extent to which the budgeting process allows for facilitating communication and coordination among managers throughout the organization/AACRA	5	8	20	20	9	0	3.3	3.0	1.1	33%
	8%	13%	32%	32%	15%	0%				
Extent to which evaluation of performance and provision of incentives is carried out by comparing actual results with budgeted results among individuals, departments, and divisions of the entire AACRA	3	5	18	31	5	0	3.5	4.0	0.9	26%
	5%	8%	29%	50%	8%	0%				

According to the results shown in Table 3, the vast majority of the 62 respondents in the sample of study gave a rating of either fair or good to the investigated budget management practices at AACRA. Specifically, the implementation budget management practices that carried a score of fair rating included availability of sources of finance for the project with 61%(38) of the respondents giving it a fair rating, the extent to which budgeting allowed for planning or quantifying a plan of action and the extent to which budgeting allowed for allocation of resources among competing uses that both received a fair rating score from 58%(36) of the respondents, and adequacy of financial

allocation to the project score that garnered a score of fair rating from 45%(28) of the respondents. Other notable project practices that the respondents felt that could be regarded as fairly present in AACRA's road construction project management included the possibility of meeting proposed project budget and the extent to which the budgeting process allowed for facilitating communication and coordination among managers throughout the organization/AACRA, as indicated by 21 (34%) and 20 (32%) of the respondents, respectively.

Thirty-two respondents (52%) indicated the extent in which the budget is utilized for controlling profits and operations (i.e. serves as a benchmark with which actual results can be compared to planned outcomes) by AACRA was good, with an almost equal number, that is 50%(30) also indicating that the extent to which evaluation of performance and provision of incentives is carried out by comparing actual results with budgeted results among individuals, departments, and divisions of the entire AACRA was good. Notably, the management practices rated as good also included the possibility of AACRA meeting proposed project budget by 24(39%) of the respondents, and the extent to which the budgeting process allows for facilitating communication and coordination among managers throughout the organization/AACRA by 20 (32%) of the respondents. Sixteen (26%) and 15 (24%) of the respondents also rated AACRA management practices of the extent to which budgeting allows for allocation of resources among competing uses and the extent to which budgeting allows for planning or quantifying a plan of action, respectively, as good.

Also to note are the findings that the extent to which the budget was used to control profits and operations (i.e. serves as a benchmark with which actual results can be compared to planned outcomes) and the extent to which the budgeting process allowed for facilitating communication and coordination and the extent to which the budgeting process allows for facilitating communication and coordination among managers throughout the organization/AACRA were budget management practices of AACRA that were rated as very good by 9(15%) of the respondents. A combined 13(21%) of the respondents also indicated that the possibility of meeting proposed project budget and the extent to which budgeting allowed for allocation of resources among competing uses was either very good or excellent. On the other hand, notably, availability of sources of finance for the project and adequacy of financial allocation to the project were budget management practices were rated as either poor or very poor by a combined 20(32%) and 16 (25%) of the respondents, respectively. A combined 13 (21%) of the respondents also indicated that the extent to which the budgeting process allowed for facilitating communication and coordination among managers throughout the organization/AACRA was either poor or very poor.

Overall, it can be concluded that the project budget management of AACRA are rated as leaning more towards fair and good as opposed towards poor/very poor and very good/excellent in achieving the organization's goals.

However, a few budget management practices are still considered as poor by a notable number of respondents.

The 5-point Likert scale ratings for each indicator of the variable obtained their standard deviation (σ) for comparison between distinct data series according to respondent ratings through division by the respective mean ($\bar{u}$). A 33% CV emerged as the most dispersed value among respondents who rated the budgeting process for manager communication and coordination across the organization/AACRA (see Table 2). This was closely followed by the dispersion in the rating of adequacy of financial allocation to the project that had a CV of 32%. The possibility of meeting the proposed project budget (CV = 29%) and the extent to which the budget allows for planning or quantifying a plan of action (CV = 27%) followed generated slightly more consensus had slightly more consensus, as indicated by their slightly lower CVs as compared to 33% and 32%. The least dispersion or the observation with the most consensus among the respondents was the extent to which the budget is used to control profits and operations (i.e. serves as a benchmark with which actual results can be compared to planned outcomes), with a CV value of 18%.

In addition to information obtained from the respondents regarding budget management practices of AACRA and performance of road construction projects, qualitative data accessed from the sampled respondents sought to determine the challenges that road construction managers encountered in relation to project budgets at AACRA and the role of project managers in ensuring that the proposed budget gets the proper financial allocation for successful implementation of road construction projects. One of the respondents (R01) had this to say in relation to budget challenges and their effect on road construction project implementation by AACRA:

"In my view, the challenges related to budget management that affect effective implementation and completion of road construction projects by AACRA have mainly to do with expanding budget requirements, delay in payment of workers contracted to implement the projects, and un-budgeted for or unforeseen project design changes and re-works related low quality work" (Respondent R01, 4th August, 2024).

The view of Respondent (R01) above general echoes the findings from the quantitative data (Likert-scale ratings) where a good number of respondents indicated that availability of sources of finance for the project was less than what would be the required amount (61% indicating fair) and the rating of also fair by 45% in regard to the adequacy of financial allocation to the project. With a fairly

substantial number of respondents rating these budget management practice of AACRA as fair or below fair, the implications are that they need improvement.

Respondents R01 had this to add in relation to the roles that project managers can play in having access to adequate budget for successful road project implementation:

“It is important to formulate a budget that covers for projected unforeseen changes to project design and re-works, and strive for the project to meet quality standards at all stages of implementation and to be within planned project completion times so as to minimize costs associated with re-works or extended project time-lines”. (Respondent R01, 4th August, 2024).

Respondent R01’s view reflects the findings from the quantitative data where a substantial number of respondents

(58%) rated the extent to which the budget allows for planning or quantifying a plan of action as fair, with the implication that budget formulation at AACRA is not adequately formulated or planned for to cover unforeseen circumstances and thus impacting on project performance measures such as quality and completion times

Rating of Performance of Road Construction Projects

AACRA invited the 62 people who participated in the study to score a list of performance indicators that were presented to them. The assembled indicators served as a representation of road construction activities in Addis Ababa's municipal territory. This exercise functioned to assess the field performance of road construction works. An analysis of participant responses through numerical statistics appears in Table 4 before discussing the principal findings.

Table 4: Project Management Indicators

Variable								Likert		
	Very Poor	Poor	Fair	Good	Very Good	Excellent	Mean	Median	Std. Dev.	$CV = \frac{\sigma}{\mu} (100)$
Project Performance Indicators										
Adherence to and finishing the project within set timelines	10	20	25	7	0	0	2.5	3.0	0.9	36%
	16%	32%	40%	11%	0%	0%				
Completion of the project within the planned budget	14	24	21	3	0	0	2.2	2.0	0.9	41%
	23%	39%	34%	5%	0%	0%				
Meeting quality standards and requirements set	6	8	28	13	7	0	3.1	3.0	1.1	35%
	10%	13%	45%	21%	11%	0%				
Satisfying stakeholders	4	6	32	12	8	0	3.2	3.0	1.0	31%
	6%	10%	52%	19%	13%	0%				
Long-term durability of the road(s)	1	8	31	16	6	0	3.3	3.0	0.9	27%
	2%	13%	50%	26%	10%	0%				

As per Table 4, fair was a common rating for the indicators reflecting the performance road project construction implementation of AACRA. Satisfaction of stakeholders and long-term durability of the road(s) were performance indicators that were accorded the fair rating by 32 (52%) and 31 (50%) of the respondents, respectively. In the category of fair, these were followed by meeting quality standards and requirements set and adherence to and finishing the project within set timelines by 28(45%) and 25 (40%) of the respondents, respectively. Twenty-one (34%) of the respondents gave a fair rating to the performance

indicator of completion of the project within the planned budget.

A substantial number of respondents rated AACRA’s performance on some indicators as poor or very poor. The completion of project within the planned budget received a combined rating of poor and very poor from 38(62%) of the respondents, while adherence to and finishing the project within set timelines elicited a combined rating of poor and very poor from 30(48%) of respondents. Notably, meeting quality standards and requirements set elicited a combined rating of poor and very poor from 14(23%) of the

respondents, while long term durability and satisfaction of stakeholders had a combined 10(16%) and 9(15%) of the respondents rating the performance indicators as either poor or very poor, in as far as road construction projects by AACRA was concerned. Also notably, satisfaction of stakeholders, long-term durability of the roads, and meeting quality standards and requirements set elicited performance indicator rating of very good by a few respondents, that is, 8(13%), 7 (11%), and 6 (10%)

The coefficient of variation (CV) indicates a notable disparity in the respondents' 5-point Likert scale rating of the project performance indicators with the least consensus being exhibited in the view of completion of the project within the planned budget by AACRA which has the highest CV of 41%. This is followed by the rating of the adherence to and finishing the project within set timelines with a measure of variation of CV = 36%, The variability in the responses relating to the observation of AACRA meeting quality standards and requirements set generated a CV of 35% that is almost equal to that of adhering to and finishing the project within set timelines. The project performance indicator that generated the most consensus among the 62 respondents and which had the least CV was the rating of long-term durability of the road(s), a CV of 27%.

In conclusion, the performance metrics for road building projects in Addis Ababa City were rated by AACRA in a fair manner, with a minor amount of poor and acceptable.

From the qualitative information gathered from workers at AACRA through interviews, one of the respondents (R02) described factors affecting road construction project performance in the following statements:

"The projects, more often than not are completed outside the set timelines, often occasioned by delays emanating from cash flow or budget management issues resulting in non-compensation of land or property owners who are affected by the projects, and which in turn results in delays as disputes are addressed. "(Respondent R02, 4th August, 2024).

The observation by Respondent R02 supports the findings from the data collected and analyzed quantitatively, where the respondents who rated the adherence to and finishing the project within set timelines by AACRA as fair, poor, and very poor were 40%, 32%, and 16%, respectively. It is informative to note that none of these ratings fall in the,

'Very Good' or 'Excellent' categories, and only 11% fall in the 'Good' category, with the indication that this aspect of project performance stands to be improved.

Another respondent (R03) pointed out additional factors impeding the successful performance of road construction projects, thus:

"Project design discrepancies have forced project managers to re-focus on design, quality issues have at times led to rework of projects, as well as escalation in project costs, and late changes or inclusions in project designs leads to adjustments of project completion times, Lack of adequate involvement of stakeholders, who in turn can emerge with law suits impact on the progress of the project" (Respondent R03, 4th August, 2024).

The views of Respondent R03, in general, support the findings obtained from the quantitative data in that the 62 respondents' Likert scale rating of AACRA's meeting of quality standards and requirements set was by 45% (fair), 13% (poor), and 10% (very poor), while AACRA's satisfaction of stakeholders was rated by 52%(fair), 10%(poor), and 6%(very poor). It is worthwhile noting that the majority of respondents rated these project performance indicators as falling the categories of 'fair' and below, with the implication being that the performance indicators stand to be improved.

Correlation Analysis for Budget Management Skills and Performance of Road Construction Projects (Inferential Statistical Analysis)

Supported by the Statistical Package for Social Scientists (SPSS), the Spearman's coefficient of correlation was used to probe the degree and relevance of the relationship or correlation between the independent variable of and the dependent variable (performance of road construction projects) of study. Table 5 below comprises the correlation matrix for all the independent and dependent variables, and forms the basis for interpreting the output relating to not only the relationship between the budget management and performance of road construction project, but also provides a reference point for the subsequent interpretation of the relationship between the other independent variables ((project management skills, stakeholder engagement, and contract compliance) as stipulated in objectives 2, 3, and 4, with the dependent variable (performance of road construction project).

TABLE 5: The Spearman Correlation Matrix for The Budget Management Practices and Performance of Road Construction Projects

Variables	Road Construction Performance Indicators	Budget Management Practices	Project Management Skills	Stakeholder Engagement	Contract Management and Compliance
Road Construction Performance Indicators	1.000				
Budget Management Practices	.650**	1.000			
	.000				
Project Management Skills	.740**	.879**	1.000		
	.000	.000			
Stakeholder Engagement	.868**	.812**	.923**	1.000	
	.000	.000	.000		
Contract Management and Compliance	.926**	.624**	.761**	.902**	1.000
	.000	.000	.000	.000	

From the correlation test results in Table 5, the relationship between budget management practices and road construction performance indicates a statistically significant positive correlation of 0.650, indicating that successful road project performance is associated with good budget management practices at AACRA. The Spearman Rho correlation coefficient of 0.650 can be interpreted to mean a moderately strong positive relationship between budget management practices and project performance. According to Gray et al (2012), relationship between variables with a correlation coefficient of between ± 0.35 and ± 0.65 indicates a moderate strength relationship.

The observed p-value of 0.000 for budget management practice versus road construction performance association requires rejection of the null hypothesis testing "Budget Management Practices demonstrate no relation to Road Construction Project Performance." The reported statistical value of 0.000 stands as the p-value. Research findings documented by Lind et al (2012) demonstrate that social science researchers typically discard the null hypothesis (H_0) when a research test's p-value falls below 0.05. The metrics suggest that the chance for the null hypothesis to be true remains minimal. A p-value at or above 0.05 indicates a

limited chance the null hypothesis is wrong leading to non-rejection of the null hypothesis.

Discussions

The tests demonstrated that Budget Management Practices exhibit linked behavior with Performance of Road Construction Projects or Budget Management Practices impact road construction project performance levels. The practical implication of the above inferential statistical analysis finding, which, by interpretation, is generalizable to the population of similar authorities to AACRA that are mandated to carry out road construction projects that require substantial funding, is that, poor performance or failure of most projects can be linked to ineffective management of the project's budget, while the success of the project can be linked effective budget management practices. This finding is collaborated by other researchers, and for instance, Zaman et al (2023) have observed that by applying project management standards and practices to plan, carry out, oversee, and regulate project activities, including project budget, that improve project efficiency and effectiveness, project managers have a direct impact on the success of their projects.

Conclusion

Summary of Findings

The research results of the study were focused on main objectives as evaluating the influence of budget management practices on the success of AACRA's projects in Ethiopia. Nonetheless, a considerable proportion of respondents still considered some budget management techniques as inadequate, including the availability of funding for the project and suitability of financial allocation to the project.

Budget Management Practices and the Performance of Road Construction Projects Undertaken by AACRA

When it comes to the findings of the first specific objective of the study, which was to investigate the budget management practices at AACRA and, as a result, their influence on the success of road construction projects carried out by the authority, the majority of the 62 respondents in the sample of the study gave a rating of either fair or good to the budget management practices that were investigated at AACRA. Notably, the implemented management practices that carried a score of fair included availability of sources of finance for the project, the extent to which budgeting allowed for planning or quantifying a plan of action, the extent to which budgeting allowed for allocation of resources among competing uses, and adequacy of financial allocation to the project. Rated as good in terms of budget management practices included the extent to which the budget is used to control profits and operations (i.e. serves as a benchmark with which actual results can be compared to planned outcomes) by AACRA and the extent to which evaluation of performance and provision of incentives is carried out by comparing actual results with budgeted results among individuals, departments, and divisions of the entire AACRA was good. However, a few budget management practices were still considered as poor by a notable number of respondents, including the availability of sources of finance for the project and adequacy of financial allocation to the project.

The inferential statistics test results indicated that the relationship between budget management practices and road construction performance had a statistically significant positive correlation that was interpreted to mean that successful road project performance is associated with good budget management practices at AACRA. The statistically significant relationship indicates that the budget management practices variable regarded as an effective explanatory variable of performance of road construction projects.

Implications of the Study

Policy Implications of the Study

Given that one of the main contributors to delays in road construction project implementation by AACRA is discrepancies between planned project budget and the actual budget occasioned by among other factors unforeseen costs related to reworks to adhere to quality work and poor control in the use of financial resources, the Ethiopian Roads Authority through the Government, should strive to enact policies that ensure that unforeseen circumstances are effectively forecasted and funds adequately provided for during the budgeting process and robust auditing measures are put in place to monitor the adherence of all faces of project implementation to the forecasted budget and time lines. Policies regarding transparent and effective allocation of road construction project resources and their implementation to qualified contractors as well as frequent training of AACRA staff in all cadres so that they remain relevant in effectively discharging their duties, should be enhanced and enforced to get better performance from AACRA.

Theoretical Implication of the Study

Project management theory and practice put forth by Kerzner (2018), a prominent figure in the field, suggests that road construction projects can be successfully executed when various components of project management, including financial management, leadership abilities, stakeholder involvement, and contract management and compliance, are handled with utmost care and precision. Despite its strengths, Project Management Theory is not without limitations, such as its tendency to focus predominantly on the process, leading to rigid and potentially costly and time-consuming practices. This identified weakness emphasizes the need to incorporate complementary theories, such as Stakeholder Theory, to provide a more holistic understanding of the intricate dynamics within project management. Stakeholder Theory, as proposed by Freeman (1984) and further expounded upon by Waddock (2002), accentuates the importance of understanding how various stakeholders influence and interact with organizations. Of the four independent variables investigated in the current research, the findings indicated effective stakeholder engagement ranked second only to contract management compliance in terms of its perceived association with successful performance of road construction projects carried out by AACRA, with a high statistically significant positive Spearman's rho correlation coefficient of 0.868, emphasizing the argument that stakeholder considerations are important in successful implementation of construction projects and therefore should be given as much attention as the process aspects of construction.

Body of Knowledge Research Implications of the Study

The findings of the current research are indicative of the fact that the myriad of factors contributing to a successful construction project management are wide ranging such that the training project management requires to impart some basic understanding of each of the varied fields or disciplines, to the learner that, for instance, include, people management skills (such as from human resource management), budgeting skills (from accounting and finance), conflict resolution skills and legal aspects of the same (from psychology and/or sociology, and from law), and many others, to mention but a few. Therefore, the implications of the study findings, where it was established that budget management, has a significant impact on successful implementation of road construction projects, is that, the project management program should be designed as much as possible to expose the student to basic knowledge in the variety of disciplines that can impart knowledge that enhances the flexibility approach in an individual, and which is required by a successful project manager in the contemporary world.

Conclusions

From the findings of the research it can be concluded that effective implementation of aspects of project management best practices of budget management are positively correlated with better performance of road construction projects by AACRA. It can also be concluded that implementation of these practices at AACRA can be rated as mostly lying in the range of fair to good. However, what cannot be ignored, and as cited by a considerable number of research participants, aspects of these practices at AACRA have a rating that falls in the range of poor to very poor, and which needs management attention in order to reap maximally from the rewards promised to project managers and other stakeholders, when they embrace project management best practices. The areas of concern include: Budget Management (planning for adequate funding of the project, completing of the project within budget costs by managing escalation of costs through deviations from designs and quality issues that require re-works).

Recommendations

The current research's findings lead to the recommendations that project managers need to ensure that the proposed budget gets the proper financial allocation for successful implementation of road construction projects. Project managers can play a role that ensures successful completion of their projects by formulating a budget that covers for projected unforeseen changes to project design and re-works, striving for the project to meet quality standards at all stages of implementation and operating within planned

project completion times so as to minimize costs associated with re-works or extended project time-lines.

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