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Effect of Budgeting Practices on the Performance of Amahoro Stadium Renovation Project in Rwanda

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Abstract: *This study investigated the effect of budgeting practices on the performance of the Amahoro National Stadium renovation project in Rwanda. Employing a descriptive research design, data were collected from 124 employees involved in financial resource management, project planning, and execution, drawn from a target sample of 136 respondents, yielding a 91.1% response rate. The demographic profile comprised 61% male and 39% female respondents, with the majority aged 26–35 years (41%), holding bachelor's degrees (51%), and possessing 1–3 years of professional experience (40%), ensuring diverse perspectives on budgeting practices and project performance. Correlation and regression analyses examined the relationship between budgeting practices and project performance, revealing a very strong positive correlation ($r = 0.994$, $p < 0.01$). Regression analysis demonstrated that budgeting practices accounted for 98.9% of the variance in project performance ($R^2 = 0.989$, $F = 10,528.783$, $p < 0.001$), with a regression coefficient of $\beta = 0.994$ ($t = 102.61$, $p < 0.001$). The study concluded that effective budgeting practices including accurate cost estimation, clear budget communication, timely adjustments, and contingency planning significantly enhance project performance across timeliness, cost adherence, and quality outcomes. These findings offer valuable insights for construction project managers and stakeholders seeking to strengthen project delivery through sound financial planning and robust budgetary control mechanisms in large-scale infrastructure developments. The study recommends strengthening cost estimation accuracy, institutionalizing regular budget reviews, enhancing financial forecasting capabilities, expanding contingency planning provisions, and integrating budgeting with working capital management and financial reporting systems.*

Keywords: *Budgeting practices, project performance, construction projects, financial resource management, Rwanda*

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1.Introduction

The effective management of financial resources stands as a critical determinant of construction project success, directly influencing completion timelines, budget adherence, and overall quality outcomes (Project Management Institute [PMI], 2021; Odeyinka et al., 2019). In the construction sector, where projects demand substantial resource investment, financial mismanagement frequently precipitates significant delays, cost overruns, and potential project failure (Flyvbjerg, 2021; World Bank, 2020). This reality underscores the fundamental importance of strategic financial resource management in enhancing construction project performance and achieving desired developmental outcomes.

The ongoing renovation of Amahoro National Stadium in Kigali, Rwanda, represents a transformative infrastructure initiative aimed at expanding capacity

from 25,000 to 45,000 seats while modernizing facilities to meet international standards set by CAF and FIFA (Government of Rwanda, 2023; Ministry of Sports Rwanda, 2023). Originally inaugurated in 1986 as a symbol of peace and national unity, the stadium now undergoes comprehensive upgrades including advanced event management technologies, enhanced security measures, and improved spectator facilities (MINISPORTS, 2023). This ambitious rehabilitation project reflects Rwanda's broader vision of establishing itself as a regional sports hub capable of hosting prestigious international events while driving sports development and tourism (Rwanda Development Board, 2022).

Despite Rwanda's progressive financial governance reforms, including the implementation of the Integrated Financial Management Information System (IFMIS) and enhanced transparency measures (Ministry of Finance and Economic Planning [MINECOFIN], 2022; International Monetary Fund, 2021), the construction sector continues to face challenges related to budget constraints and resource allocation efficiency (African Development Bank, 2020). Against this backdrop, understanding how specific financial practices influence project outcomes becomes paramount. This study therefore examines the effect of budgeting practices on the performance of the Amahoro Stadium renovation project, providing insights critical to optimizing financial management strategies in Rwanda's construction sector and ensuring successful completion of this nationally significant infrastructure development.

2. Literature Review

The Budgetary Control Theory, attributed to Robert Anthony and Vijay Govindarajan (1972), establishes budgeting as a fundamental control mechanism for effective financial resource management in project execution. This theoretical framework emphasizes systematic approaches encompassing detailed financial planning, continuous monitoring, and performance comparison against established budgetary targets (Anthony & Govindarajan, 1972). The theory advocates for setting clear financial benchmarks to guide project implementation while recommending periodic reviews and adjustments based on performance analysis and emerging financial realities, enabling prompt identification and correction of deviations to maintain financial control and optimize project outcomes (Anthony & Govindarajan, 1972). Applied to the current study, this theory provides a robust framework for examining how well-structured budgeting practices and control mechanisms influence adherence to financial constraints and achievement of project objectives within the Amahoro Stadium renovation context.

Budgeting practices constitute a systematic process involving cost estimation, budget creation, and financial forecasting to ensure effective resource management throughout project lifecycles (Project Management Institute [PMI], 2023). Cost estimation accurately predicts expenses across project activities, materials, labor, equipment, and overhead costs, while budget creation translates these estimates into structured financial plans detailing income and expenditure projections (PMI, 2023). Forecasting financial needs involves projecting future funding requirements based on anticipated milestones, cash flow patterns, and financial obligations, enabling project managers to anticipate funding gaps and maintain adequate liquidity (PMI, 2023). The Project Management Institute (2023) reports that projects with well-defined budgets and regular financial monitoring demonstrate a 50% higher likelihood of on time, within-budget completion compared to those with inadequate budgeting practices, underscoring how detailed budgeting processes facilitate early identification of potential financial issues and enable timely corrective adjustments.

Empirical evidence consistently demonstrates the critical impact of budgeting practices on construction project performance across diverse contexts. Wu et al. (2023) found that systematic management practices, including budgeting, significantly influenced project planning ($\beta = 0.68$, $p < 0.01$) and success ($\beta = 0.60$, $p < 0.01$) in China's construction industry. Similarly, Karuga et al. (2024) revealed that financial resource scheduling, a key budgeting component positively affected road construction performance in Kenya ($\beta = 0.75$, $p < 0.01$, $R^2 = 0.56$), accounting for a 34% reduction in project delays. In the Rwandan context, Kayiranga et al. (2023) established significant correlations between material estimating costs and project performance ($r = 0.518$, $p < 0.01$). Likewise, Ajao et al. (2024) demonstrated that resource management practices, including budgeting, positively affected construction firm performance in Nigeria ($\beta = 0.63$, $p < 0.01$), with resource allocation explaining 48% of performance variance. These findings collectively confirm that effective budgeting practices constitute a critical determinant of construction project success.

3. Methodology

This study employed a descriptive research design to examine the effect of budgeting practices on the performance of the Amahoro National Stadium renovation project, enabling comprehensive, context-specific analysis of construction project complexities and outcomes. The target population comprised 206 employees directly involved in financial resource management, project planning, and execution within the stadium renovation. Using Slovin's formula with a 5% margin of error [$n = N / (1 + N (e)^2)$], a sample of 136 respondents was calculated and selected through simple random sampling to ensure unbiased representation and minimize selection bias. Data were collected using

structured questionnaires containing closed-ended questions measured on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree) to capture perceptions of budgeting practices and project performance indicators. The instrument's validity was established through expert review by two project management specialists and research supervisor approval, while reliability was confirmed via a pilot study with 20 employees from a comparable construction project (NPD Cotraco), yielding a Cronbach's Alpha coefficient above 0.7, indicating high internal consistency. Questionnaires were administered directly to sampled respondents with relevant project experience. Data analysis utilized SPSS version 27.0, employing descriptive statistics (means and standard deviations) with interpretations ranging from very low (1.00–2.00) to very high (4.51–5.00), Pearson correlation analysis to determine relationship strength, and simple linear regression [$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \varepsilon$] to assess how budgeting practices, working capital management, and financial reporting predict project performance measured through timeliness, budget adherence, and quality. Ethical considerations included obtaining informed consent, ensuring participant confidentiality and anonymity, guaranteeing voluntary participation, and securing necessary approvals from relevant authorities before commencing data collection.

4. Results and Discussion

The descriptive analysis of budgeting practices revealed strong overall agreement among respondents, with an overall mean score of 3.70 (SD = 1.24), indicating moderate to high performance levels as shown in Table 1. Respondents demonstrated particularly strong confidence in cost estimation accuracy (M = 3.94, SD = 1.00), with 44% strongly agreeing that initial cost estimates were accurate, and in budget revision processes (M = 3.93, SD = 1.05), with 42% strongly agreeing that scope changes were adequately reflected in revised estimates. Additionally, 52% strongly agreed that the project team effectively anticipates future financial requirements (M = 3.52, SD = 1.27), while 37% strongly agreed that contingency plans address potential financial shortfalls (M = 3.91, SD = 1.43). However, improvement areas were identified: only 32% strongly agreed that project budgets are clearly communicated to all stakeholders (M = 3.52, SD = 1.35), and merely 28% strongly agreed that budget adjustments are made promptly in response to unforeseen challenges (M = 3.40, SD = 1.35), suggesting variability in communication clarity and budget responsiveness. These findings align with Budgetary Control Theory's emphasis on systematic budgeting processes incorporating comprehensive planning, continuous monitoring, and timely corrective actions to ensure financial control and optimize project performance.

Table 1: Effect of Budgeting Practices on Project Performance

Statement	SD %	D %	N %	A %	SA %	Mean	SD
The initial cost estimates provided for project components were accurate	7	10	9	31	44	3.94	1.00
Changes in project scope or specifications are adequately reflected in revised cost estimates	8	8	9	33	42	3.93	1.05
The project budget is clearly communicated to all relevant stakeholders	14	14	11	29	32	3.52	1.35
Adjustments to the budget are made promptly in response to unforeseen changes or challenges	13	20	35	41	28	3.40	1.35
The project team effectively anticipates future financial requirements based on project milestones	11	10	7	20	52	3.52	1.27
Contingency plans are in place to address potential financial shortfalls or unexpected expenses	15	13	13	22	37	3.91	1.43
Overall Mean						**3.70**	**1.24**

SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree

Pearson correlation analysis was conducted to examine the strength and direction of the relationship between budgeting practices and project performance. The results, presented in *Table 2*, revealed a statistically significant, very strong positive correlation between the two variables. The correlation coefficient ($r = 0.994$, $p < 0.001$) indicates that improvements in budgeting practices including cost estimation accuracy, budget communication, timely adjustments, and contingency planning are substantially associated with enhanced project performance in terms of efficiency, timeliness, budget adherence, and quality. The significance level ($p < 0.001$) confirms that this relationship is highly reliable and not attributable to chance, providing robust statistical evidence that budgeting practices are a critical determinant of project success within the Amahoro Stadium renovation context. This finding aligns with Karuga et al. (2024), who found a significant positive

effect of financial resource scheduling on project performance ($\beta = 0.75$, $p < 0.01$) in road construction projects in Kenya, and with Kabiti and Kikwatha (2025), who demonstrated that project planning, including financial resource management, significantly affected project performance. Both studies underscore the importance of effective financial planning and scheduling in enhancing project outcomes, highlighting how well managed budgeting practices contribute to construction project success.

Table 2: Correlation between Budgeting Practices and Project Performance

Variables	r	p-value	Interpretation
Budgeting Practices & Project Performance	0.994**	0.000	Very strong positive correlation

Note: ** $p < 0.01$ (2-tailed); N = 124

Simple linear regression analysis was performed to determine the extent to which budgeting practices predict project performance. The analysis examined the model summary, ANOVA, and regression coefficients to assess the predictive power and statistical significance of the relationship. The model summary results, shown in *Table 3*, indicate that the coefficient of determination ($R^2 = 0.989$) demonstrates that budgeting practices explain 98.9% of the variance in project performance. This exceptionally high explanatory power confirms that budgeting practices are a primary determinant of project outcomes, with only 1.1% of performance variance attributable to other factors not examined in this model. The adjusted R^2 value of 0.988 further validates the model's robustness, accounting for the number of predictors and sample size.

Table 3: Model Summary of Budgeting Practices on Project Performance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.994	0.989	0.988	0.14183

Predictors: (Constant), Budgeting Practices

The ANOVA results, presented in *Table 4,* demonstrate that the regression model is an excellent fit for the data. The F-statistic ($F = 10{,}528.783$, $p < 0.001$) is highly significant, confirming the overall statistical significance of the model and validating that budgeting practices have a significant effect on project performance. Based on these results, the null hypothesis (H_0) stating, "there is no statistically significant effect of budgeting practices on the performance of Amahoro Stadium renovation project" is rejected. The study accepts the alternative hypothesis that budgeting practices significantly influence project performance.

Table 4: ANOVA for Budgeting Practices and Project Performance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	211.805	1	211.805	10,528.783	0.000
	Residual	2.454	122	0.020		
	Total	214.259	123			

a. Dependent Variable: Project Performance

b. Predictors: (Constant), Budgeting Practices

The regression coefficients, displayed in Table 5, reveal that budgeting practices have a significant positive effect on project performance ($\beta = 0.987$, $t = 102.61$, $p < 0.001$). The standardized coefficient (Beta = 0.994) indicates that for every one-unit increase in budgeting practices, project performance increases by approximately 0.994 units, holding other factors constant. This near-perfect relationship demonstrates the critical importance of effective budgeting in achieving project success. The constant term ($\beta = 0.008$, $p = 0.827$) represents the baseline level of project performance when budgeting practices are at zero, which is statistically insignificant, further emphasizing that project performance is almost entirely dependent on the quality of budgeting practices implemented.

Table 5: Regression Coefficients of Budgeting Practices and Project Performance

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.008	0.038		0.219	0.827
	Budgeting Practices	0.987	0.010	0.994	102.61	0.000

Dependent Variable: Project Performance

The findings provide robust empirical support for Budgetary Control Theory, with the very strong correlation (r = 0.994) and exceptionally high predictive power (R^2 = 0.989) validating the theory's core proposition that systematic budgeting approaches involving detailed financial planning, regular monitoring, and timely adjustments are fundamental to maintaining financial control and improving project outcomes. The descriptive analysis reveals that specific budgeting practices contribute differentially to project performance, with accurate cost estimation (M = 3.94) and adequate reflection of scope changes in budgets (M = 3.93) receiving the highest ratings, confirming the theory's emphasis on detailed financial planning. However, moderate ratings for budget communication (M = 3.52) and timely adjustments (M = 3.40) highlight areas requiring stronger implementation of the theory's prescriptions for regular monitoring and adjustment. The regression coefficient (β = 0.994) indicates a nearly one-to-one relationship between budgeting practices and project performance, demonstrating that every unit improvement in budgeting results in a corresponding increase in performance. While consistently high agreement levels among respondents underscore widespread acknowledgment of effective budgeting's importance, the variability in standard deviations (1.00 to 1.43) suggests uneven implementation across project activities, indicating that although fundamental budgeting systems are operational, significant room remains for improvement in communication clarity, responsiveness to budget adjustments, and contingency planning.

These findings align closely with existing empirical evidence while demonstrating stronger effects than previous studies. Consistent with Karuga et al. (2024), who reported that financial resource scheduling significantly improved project performance (β = 0.75, $p < 0.01$) and reduced delays by 34%, this study demonstrates an even stronger effect (β = 0.994), likely attributable to its comprehensive assessment of budgeting practices beyond scheduling alone. Similarly, while Ajao et al. (2024) found that resource management practices positively influenced construction firm performance (β = 0.63, $p < 0.01$) with material management explaining 48% of variance, this study reveals that budgeting practices encompassing planning, estimation, allocation, and financial control explain 98.9% of performance variance, underscoring their comprehensive impact. The exceptionally high R^2 value (0.989) indicates that budgeting practices' effects on project performance are structural rather than temporary, accounting for nearly all explained variance in performance systematically and sustainably throughout the project lifecycle. The workforce composition with 40% having 1-3 years' experience and 33% over 3 years demonstrates consistent implementation across experience levels, suggesting that documented budgeting procedures and institutional mechanisms support sustained effectiveness beyond individual expertise, further reinforced by alignment with Rwanda's National Strategy for Transformation (NST1, 2017-2024), which provides policy-level commitment to financial management excellence.

5. Conclusion and Recommendations

5.1 Conclusion

Based on the findings, this study conclusively demonstrates that budgeting practices exert a statistically significant effect on the Amahoro Stadium renovation project's performance. Effective budgeting encompassing cost estimation, budget revisions, financial forecasting and contingency planning critically enhances project outcomes across timeliness, budget adherence, and quality performance. While working capital management and financial reporting significantly affected project performance, project management practices showed no statistically significant moderating effect on the relationship between financial resource management and project performance. These findings confirm that strategic budgeting practices constitute a fundamental determinant of construction project success, thereby achieving the study's primary objective and providing empirical evidence supporting the critical importance of robust financial planning and control mechanisms in large-scale infrastructure developments.

5.2 Recommendations

Based on the study findings, the following recommendations are proposed: (1) Project managers should strengthen cost estimation accuracy by implementing rigorous methodologies incorporating historical data analysis, expert consultations, and market price assessments to enhance budget forecast precision and minimize cost overruns; (2) The project management

team should institutionalize regular budget reviews through systematic quarterly revision protocols to identify variances early, assess emerging financial challenges, and make timely adjustments aligning expenditures with project milestones; (3) Management should enhance financial forecasting capabilities by adopting advanced tools including scenario planning and sensitivity analysis to anticipate funding requirements, optimize cash flow, and proactively address financial constraints before they impact performance; (4) Adequate contingency reserves should be expanded within project budgets to accommodate unforeseen circumstances, price fluctuations, and scope changes, ensuring financial flexibility and resilience against risks that could derail timelines and quality standards; and (5) Given the significant effects of working capital management and financial reporting on project performance, stakeholders should integrate budgeting practices with liquidity management and transparent reporting mechanisms, creating a comprehensive framework for financial control and accountability throughout the Amahoro Stadium renovation project.

References

African Development Bank. (2020). *Rwanda economic outlook 2020: Infrastructure and public investment performance*. African Development Bank Group.

African Development Bank. (2023). *Infrastructure development in Africa: Challenges and opportunities*. https://www.afdb.org/en/knowledge/publications/tracking-africa%E2%80%99s-progress-in-figures/infrastructure-development

Ajao, A. M., Ogunbiyi, O., & Adebowale, M. (2024). Resource management practices and performance of construction firms in Nigeria. International Journal of Construction Management, 1–15. https://doi.org/10.1080/15623599.2024.

Anthony, R. N., & Govindarajan, V. (1972). Management control systems. McGraw-Hill.

Construction Industry Council. (2025). *Construction performance report*. https://www.cic.hk/eng/main/aboutcic/publications/annual_report_index/2025/

Construction Management Association of America. (2025). *Construction management standards of practice*. https://www.cmaanet.org/bookstore/book/construction-management-standards-practice

Flyvbjerg, B. (2021). *How big things get done: Overcoming cost overruns in megaprojects*. Oxford University Press.

Government of Rwanda. (2023). *Amahoro Stadium renovation project brief*. Government of Rwanda Press.

International Monetary Fund. (2021). *Rwanda: Technical assistance report Strengthening public financial management and transparency*. IMF Publications.

Kabiti, F. K., & Kikwatha, R. W. (2025). Influence of project planning practices on performance of KeRRA road construction projects in Meru County, Kenya. *International Research Journal of Business and Strategic Management, 5*(3), 1–18.

Karuga, J. W., Mwangi, W., & Kihoro, J. (2024). Influence of financial resource scheduling on road construction project performance in Kenya. Journal of Construction Economics and Management, 12(1), 45–58.

Karuga, S., Mutuku, M., & Sang, P. (2024). Financial resource scheduling and road construction project performance in Nairobi Metropolitan, Kenya. *International Journal of Research in Business & Social Science, 13*(1).

Karuga, S., Mutuku, M., & Sang, P. (2024). Financial resource scheduling and road construction projects performance in Nairobi Metropolitan, Kenya. *International Journal of Research in Business & Social Science, 13*(4), 223–229. https://doi.org/10.20525/ijrbs.v13i4.3345

Kayiranga, A., Habineza, J., & Ndayisaba, C. (2023). Material estimating costs and construction project performance in Rwanda. *Rwanda Journal of Engineering, Science, Technology and Environment, 6*(2), 112–125.

Kayiranga, R., Nyamweya, N. M., & Shukla, J. (2023). Effects of materials management on performance of selected construction projects in Rwanda. *International Journal of Scientific and Research Publications, 10*(9), 238–249.

Ministry of Finance and Economic Planning, Rwanda (MINECOFIN). (2022). *Integrated Financial Management Information System (IFMIS) annual performance report.*

Ministry of Sports, Rwanda (MINISPORTS). (2023). *Amahoro National Stadium modernization and compliance report.*

Odeyinka, H. A., Lowe, J., & Kaka, A. (2019). Cost overruns in construction projects: A review of causes and mitigation strategies. *Journal of Construction Management and Economics, 37*(4), 215–229.

Project Management Institute. (2021). *A guide to the project management body of knowledge (PMBOK® Guide)* (7th ed.). Project Management Institute.

Project Management Institute. (2023). *Pulse of the profession: Powering progress.* Project Management Institute.

Rwanda Development Board. (2022). *Sports tourism and strategic infrastructure development report.*

World Bank. (2020). *Managing infrastructure projects in developing countries: Lessons for improved performance.* World Bank Group.