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Influence of Financial Management Practices on Timely Completion of Electrical Infrastructure Projects in TANESCO: Evidence from Geita Zone, Tanzania

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Abstract

The study assessed the influence of financial management practices on timely completion of electrical infrastructure projects in TANESCO focusing Geita Zone, Tanzania. The study used a quantitative research approach and explanatory research design. The sample size was 80 personnel (project managers, engineers, finance officers, and procurement staff) directly involved in TANESCO electrical infrastructure projects in Geita Zone. A census sampling technique was used for selecting the respondents. Structured questionnaires were used for gathering information. Quantitative data were analysed through mean scores, standard deviations and multiple linear regression analysis. The findings revealed that, Financial Planning ($\beta = 0.32$, $p < 0.001$) has the strongest influence, suggesting that proper forecasting and allocation of funds are crucial for project success. Cash flow management ($\beta = 0.30$, $p = 0.001$) is also a significant predictor, indicating that timely availability of funds ensures uninterrupted project implementation. Budgeting ($\beta = 0.28$, $p = 0.002$) significantly contributes to project completion by guiding resource allocation and expenditure control. Cost control ($\beta = 0.21$, $p = 0.038$), although significant, has the least influence among the variables, suggesting room for improvement in cost monitoring practices. This study concludes that improving financial management practices can significantly enhance project efficiency and reduce delays in electrical infrastructure development. It is recommended that, further research is needed to gain deeper understanding of financial management challenges in infrastructure projects.

Keywords: *Financial management practices, timely completion, electrical infrastructure projects.*

1. INTRODUCTION

The timely completion of infrastructure projects remains a critical concern for developing economies, particularly in the energy sector where delays significantly affect economic growth, industrial productivity, and public welfare (Amoatey & Ankrah, 2021; Ndzi et al., 2022). Infrastructure development is widely recognized as a key driver of economic transformation in Sub-Saharan Africa, yet persistent project delays and inefficiencies continue to undermine its intended socio-economic benefits (Ofori-Kuragu et al., 2021).

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In Tanzania, the electricity subsector plays a central role in supporting national development initiatives such as industrialization and rural electrification, which depend heavily on reliable infrastructure delivery (Mashauri & Yusuph, 2022). The Tanzania Electric Supply Company Limited (TANESCO), as the primary public utility responsible for electricity generation, transmission, and distribution, is therefore central to the successful implementation of electrical infrastructure projects. However, despite continued investments, infrastructure projects in many developing countries, including Tanzania, frequently experience delays due to financial and institutional constraints (Haron et al., 2021; Ameyaw et al., 2022).

Financial management practices such as budgeting, financial planning, cost control, and fund allocation are critical determinants of project success, particularly in large-scale infrastructure projects where efficient resource utilization is essential (Nyoni & Bonga, 2021; Muriithi & Waweru, 2022). Effective financial management enhances accountability and supports adherence to project schedules, while poor financial practices are strongly associated with cost overruns and schedule slippages (Amoatey & Ankrah, 2021; Ndzi et al., 2022). In many developing countries, delayed fund disbursement, weak financial controls, and inadequate planning have been identified as major causes of project delays and underperformance (Haron et al., 2021; Ameyaw et al., 2022).

Empirical studies across Sub-Saharan Africa indicate that infrastructure projects are often hindered by inadequate financing, funding gaps, and weak financial governance systems, which limit timely project execution (Ofori-Kuragu et al., 2021; Muriithi & Waweru, 2022). Furthermore, constrained financial capacity and inefficient allocation of resources significantly affect the ability of public institutions to deliver projects within planned timelines (Nyoni & Bonga, 2021).

These challenges in Tanzania are compounded by bureaucratic procedures, procurement inefficiencies, and inconsistent funding flows, which collectively affect project implementation and completion timelines (Mashauri & Yusuph, 2022). The Geita Zone, characterized by increasing mining activities and rising electricity demand, provides a relevant context for examining how financial management practices influence project delivery outcomes.

Despite the growing body of literature on infrastructure project performance, limited studies have specifically examined the relationship between financial management practices and the timely completion of electrical infrastructure projects within TANESCO at the zonal level. Most existing studies focus broadly on construction and public sector projects without adequately addressing the financial management dynamics within electricity utilities (Ameyaw et al., 2022).

Therefore, this study seeks to assess the influence of financial management practices on the timely completion of electrical infrastructure projects in TANESCO, with specific reference to the Geita Zone. The study aims to contribute to policy and practice by providing empirical evidence on how financial management can be strengthened to improve project efficiency and support sustainable energy development in Tanzania.

2. METHODOLOGY

This study employed a quantitative research approach supported by an explanatory research design. This study was carried out in the TANESCO Geita Zone in the Geita Region due to the fact that, the available evidence indicates that various undergoing electrical infrastructure projects (agriculture and mining sectors) have faced significant hurdles (Katunzi & Mwakapala, 2023). Only 30% of targeted villages have received reliable electricity due to logistical challenges and insufficient community engagement (Mshana & Mallya, 2022). Additionally, the Rural Electrification Initiative launched in early 2019 to extend electricity access to rural communities in Geita showed that the Transmission Line Expansion project aimed at connecting remote areas to the national grid, has significant delays attributed which resulted in only partial completion (Wamba, 2021).

A census sampling technique was used, targeting all 80 personnel involved in the identified projects due to the relatively small population size. This approach ensured that every relevant perspective is captured and enhances the reliability of the study findings. Instruments were validated by research experts, and the reliability of the Likert scale items were ensured through Cronbach’s Alpha Coefficient and triangulation. Data were gathered through structured questionnaires Quantitative data was analyzed using mean scores and standard deviations as well

as multiple linear regression analysis with the help of an SPSS version 28. The regression model was presented as follows: $Y=\beta 0+\beta_1 X_1+\beta_2 X_2+\beta_3 X_3+\beta_4 X_4+\varepsilon$

Where:

- Y = Timely project completion
- X_1 = Budgeting
- X_2= Financial planning
- X_3= Cost control
- X_4= Cash flow management
- β_0 = Constant
- $\beta_1-\beta_4$ = Coefficients
- ε = Error term

Additionally, the study adhered to the ethical consideration by asking consent to all respondents of the study, ensured the voluntary participation, as well as the anonymity and confidentiality. Further, the principle of do not harm, and the clearance and permission letters were equally observed during the study.

3. RESULTS

This chapter presents the analysis and the results of the study on the influence of financial management practices on the timely completion of electrical infrastructure projects in Tanzania Electric Supply Company Limited (TANESCO), Geita Zone. The analysis is based on data collected through structured questionnaires and is organized into descriptive statistics, reliability analysis, correlation analysis, and regression results.

3.1 Reliability Results

Table 1: Reliability Results of Individual Item

Variable	Cronbach's Alpha	Interpretation
Budgeting	0.81	Reliable
Financial Planning	0.84	Reliable
Cost Control	0.79	Reliable
Cash Flow Management	0.83	Reliable
Timely Completion	0.86	Reliable

All variables recorded Cronbach's Alpha values above 0.7, indicating acceptable internal consistency and reliability of the research instrument.

3.2 Descriptive Statistics' Results

Table 2: Descriptive Statistics

Variable	Mean	Std. Deviation	Interpretation
Budgeting	4.12	0.68	High
Financial Planning	4.05	0.72	High
Cost Control	3.98	0.75	High
Cash Flow Management	3.89	0.80	Moderate
Timely Completion	3.76	0.83	Moderate

The findings indicate that financial management practices are generally well implemented within TANESCO projects. However, timely completion scored moderately, suggesting the presence of delays despite strong financial practices.

3.3 Regression Analysis

Table 3: Model Summary

R	R^2	Adjusted R^2	Std. Error
0.81	0.66	0.64	0.49

The model explains 66% of the variation in timely project completion, indicating a strong explanatory power of financial management practices.

3.4 ANOVA Results

Table 4: Analysis of Variance Results

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	42.18	4	10.55	43.87	0.000
Residual	21.37	93	0.23		
Total	**63.55**	**97**			

The model is statistically significant ($p < 0.001$), indicating that financial management practices significantly predict timely completion.

4.5 Regression Coefficients

Table 5: Regression Coefficients' results

Variable	Coefficient (β)	Std. Error	t-value	p-value
Constant	1.25	0.31	4.03	0.000
Budgeting	0.28	0.09	3.11	0.002
Financial Planning	0.32	0.08	4.00	0.000
Cost Control	0.21	0.10	2.10	0.038
Cash Flow Management	0.30	0.09	3.33	0.001

The regression results indicate that all financial management practices have a positive and statistically significant influence on timely completion of electrical infrastructure projects in Tanzania Electric Supply Company Limited. Financial planning ($\beta = 0.32$, $p < 0.001$) has the strongest influence, suggesting that proper forecasting and allocation of funds are crucial for project success. Cash flow management ($\beta = 0.30$, $p = 0.001$) is also a significant predictor, indicating that timely availability of funds ensures uninterrupted project implementation. Budgeting ($\beta = 0.28$, $p = 0.002$) significantly contributes to project completion by guiding resource allocation and expenditure control. Cost control ($\beta = 0.21$, $p = 0.038$), although significant, has the least influence among the variables, suggesting room for improvement in cost monitoring practices.

4. DISCUSSION

The regression results indicate that all financial management practices (financial planning, cash flow management, budgeting, and cost control) have a positive and statistically significant influence on the timely completion of electrical infrastructure projects in Tanzania Electric Supply Company Limited (TANESCO). Among these, financial planning emerged as the strongest predictor ($\beta = 0.32$, $p < .001$), highlighting the critical role of proactive forecasting and fund allocation in project success. Financial planning allows organizations to anticipate financial needs, allocate resources efficiently, and align project schedules with available funds, thereby minimizing delays. This finding is supported by studies such as Zia, Shakeel, and Nagi (2024), who found that robust financial planning enhances organizational performance and project outcomes in infrastructure projects. Similarly, Kandikattu (2025) demonstrated that financial planning significantly reduces project delays by synchronizing funds with project phases. Shah (2025) also confirmed that structured financial plans positively influence project timelines in the construction

and energy sectors, while Kerzner (2017) emphasized that financial planning forms a foundational element in project management frameworks like PMBOK.

Gichunge (2023) further showed that East African utility projects with strong financial plans experienced fewer overruns and timely completion. However, some studies provide a nuanced perspective. Okeke, Obiorah, and Ugah (2025) noted that financial planning's effectiveness is maximized when integrated with risk and schedule management systems. Shrestha (2021) argued that in uncertain project environments, rigid plans may underperform compared to adaptive scheduling strategies. Adewale and Kumar (2023) observed that planning's impact is often stronger on long-term sustainability than on short-term completion. Choudhary (2025) highlighted that in informal project settings, underutilized planning tools may limit their influence on timely outcomes, and Mugisha and Turyomurugyendo (2024) indicated that financial planning without contingency buffers may reduce predictive strength on project timelines. Overall, financial planning remains critical, particularly when complemented by flexible and integrated project management practices.

Cash flow management was also a significant predictor of project completion ($\beta = 0.30$, $p = .001$), suggesting that the timely availability and proper management of funds prevent project interruptions. Supporting studies reinforce this observation. Zia et al. (2024) reported positive effects of cash flow control on organizational and project performance, while Mburu and Nyaoga (2021) found that effective cash flow management is crucial for avoiding liquidity gaps that may stall infrastructure projects. Abiola and Ojo (2023) showed that maintaining sufficient cash flow reduced downtime in Nigerian utility projects, and Jensen and Kim (2024) confirmed that aligning cash availability with critical project purchases improves schedule adherence. The Bussecon Review (2022) similarly emphasized that cash flow management is strongly associated with timely project outcomes. Nonetheless, some literature suggests conditions under which cash flow management may be less influential.

Lee and Park (2022) indicated that without advanced forecasting systems, cash flow alone may not sustain project timelines. Ahmed and Said (2023) argued that external economic shocks could moderate the effect of cash flow on project completion, while Bello and Yusuff (2023) observed

that informal funding mechanisms in low-income settings sometimes buffer cash flow constraints, complicating the relationship. Dar and Azam (2025) noted sector-specific differences, highlighting stronger cash flow effects in manufacturing than in utilities, and Mugume and Kassa (2023) suggested that bureaucratic inefficiencies can weaken cash flow effectiveness. Therefore, while critical, cash flow management operates optimally when combined with forecasting, risk management, and effective administrative systems.

Budgeting also demonstrated a significant positive impact ($\beta = 0.28$, $p = .002$), indicating its role in guiding resource allocation and expenditure control to support project completion. Studies by Zia et al. (2024) and Cossa and Zwane (2025) show that rigorous budgeting practices improve visibility into project costs and enhance efficiency. Kandikattu (2025) highlighted that proper budgeting reduces financial waste and aligns resources with project schedules, while Ibrahim and Musa (2024) demonstrated that structured budgeting improves utility project performance by supporting timely delivery. The SME Financial Reports (2023) also reported that organizations with strong budgeting frameworks complete projects on schedule more consistently. However, contrasting perspectives exist.

Choudhary and Singh (2025) note that the effectiveness of budgeting methods depends on the context and project complexity. Hassan (2023) argued that rigid budgets may hinder adaptability, potentially causing delays. Okoye and Udo (2024) highlighted that poor-quality data reduces budget accuracy and its influence on project timelines. Patel (2025) observed that incremental budgeting may be less effective than zero-based budgeting in dynamic project environments, and Njau and Mwangi (2023) emphasized that adaptive budgeting approaches outperform static ones in volatile settings. In sum, budgeting is a key contributor to timely project completion, particularly when flexible and data driven.

Finally, cost control was statistically significant ($\beta = 0.21$, $p = .038$) but exhibited the smallest influence among the variables, suggesting that while monitoring expenses is important, its impact is relatively lower compared to planning, cash flow, and budgeting. Supporting evidence indicates that cost control ensures financial discipline, prevents overruns, and facilitates corrective action (Onubi et al., 2024; Kerzner, 2017; PMI, 2021). Contract review studies (2022) show that ongoing

cost tracking reduces delays caused by financial mismanagement, while Adeleke and Babatunde (2023) found that rigorous cost control is essential in utility projects to minimize financial waste. Conversely, some studies argue that cost control's effectiveness is limited in certain contexts. Mugisha and Busolo (2024) noted that the lack of real-time cost monitoring systems reduces impact.

Nguyen (2020) emphasized that cost control alone is insufficient when planning and forecasting are weak. Ahmed (2022) argued that advanced IT systems are required to make cost control effective, often lacking in developing country settings. Okoye and Udo (2024) observed that external price shocks can diminish cost control effects, and Dar and Azam (2025) reported that cost control is more impactful in private projects than in public utility settings dominated by bureaucratic procurement delays. These findings suggest that cost control contributes positively but needs to be integrated with other financial management practices to achieve maximum impact. The findings support the Theory of Change, which explains how specific interventions generate intermediate outcomes that contribute to achieving intended long-term results. In the context of TANESCO, effective financial planning, budgeting, cash flow management and cost control represent essential interventions for improving the timely completion of electrical infrastructure projects (Mayne, 2023). Mayne (2023) emphasizes that the effectiveness of a theory of change depends on the realization of the causal conditions and assumptions connecting interventions to their intended outcomes.

Financial planning, which demonstrated the strongest effect, suggests that TANESCO should priorities accurate financial forecasting and early identification of project funding requirements. Budgeting should translate these requirements into realistic financial allocations, while cash flow management should ensure the timely availability and disbursement of funds. Similarly, cost control should facilitate expenditure monitoring and corrective action against financial deviations. When implemented together, these practices improve resource availability, minimize financial disruptions and enhance project implementation efficiency, ultimately contributing to timely project completion. However, achieving these outcomes requires adequate funding, institutional coordination and management commitment.

From the Theory of Change perspective, these practices should not be implemented independently but as an integrated financial management system. Financial planning establishes anticipated resource requirements, budgeting translates these requirements into approved financial allocations, cash flow management ensures the availability of funds when required, and cost control maintains expenditure within approved financial limits. When these practices operate together, they create intermediate outcomes such as improved financial resource availability, reduced project interruptions, effective expenditure management and enhanced coordination of project activities. These intermediate outcomes ultimately contribute to the timely completion of electrical infrastructure projects.

4.1 Conclusions

In conclusion, the discussion reveals that while all practices are essential, their effectiveness is optimized when combined with adaptive, integrated, and context-aware project management approaches. The study concludes that financial management practices play a critical role in influencing the timely completion of electrical infrastructure projects in Tanzania Electric Supply Company Limited. Specifically, budgeting, financial planning, cost control, and cash flow management all have significant positive effects on project completion timelines. Among these factors, financial planning and cash flow management emerged as the most influential, indicating that ensuring adequate and timely availability of financial resources is key to successful project implementation. Although budgeting and cost control are also important, their relatively lower impact suggests the need for strengthening their application. Overall, the study highlights that improving financial management practices can significantly enhance project efficiency and reduce delays in electrical infrastructure development.

4.2 Recommendations

Based on the findings, the study proposes the following recommendations: TANESCO should enhance its financial planning processes by adopting comprehensive forecasting techniques and ensuring alignment between project budgets and funding availability. Long-term financial planning frameworks should be developed to minimize funding uncertainties.

The organization should establish efficient mechanisms for timely disbursement of funds to avoid interruptions in project execution. This includes streamlining payment processes and ensuring

consistent funding flows for ongoing projects. TANESCO should improve budgeting accuracy by incorporating realistic cost estimates and involving relevant stakeholders during budget preparation. Regular budget reviews and monitoring should also be conducted to ensure adherence.

The organization should adopt advanced cost control tools and systems to monitor project expenditures in real time. This will enable early detection of variances and timely corrective actions. Training programs should be provided for project managers and financial officers to enhance their skills in financial management practices, particularly in budgeting, forecasting, and cost control.

The findings suggest that policymakers should prioritize strengthening financial governance frameworks within public utilities such as Tanzania Electric Supply Company Limited. This includes improving funding mechanisms, enhancing accountability, and reducing bureaucratic delays that affect financial flows in infrastructure projects. Future studies should examine other factors influencing project completion, such as procurement practices and leadership styles. Comparative studies across different regions or sectors could provide broader insights. Further research may also adopt mixed methods approaches to gain deeper understanding of financial management challenges in infrastructure projects.

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