Int. j. adv. multidisc. res. stud. 2026; 6(2):789-799

Received: 10-02-2026
Accepted: 21-03-2026

International Journal of Advanced Multidisciplinary Research and Studies

ISSN: 2583-049X

Examining of Project Cost Overrun in Project Management: A Case Study of the Road Development Agency in Lusaka

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DOI: https://doi.org/10.62225/2583049X.2026.6.2.6033

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Abstract

This study investigated the persistent problem of cost overruns in road construction projects managed by the Road Development Agency (RDA) in Lusaka. Recent evidence showed that 78% of projects had exceeded their budgets by an average of 52%, with flagship projects such as the Lusaka-Ndola dual carriageway, Kafue Road expansion, and the Lusaka Decongestion Project recording significant financial escalations. These overruns not only consumed a large share of Zambia's infrastructure budget but also resulted in delays, reduced quality, and premature defects, raising concerns about long-term sustainability. Guided by Agency Theory, the study examined the causes and consequences of these overruns, focusing on systemic weaknesses in planning, procurement, financial management, and stakeholder relations. A single-case study design was applied, drawing data from 60 respondents, including engineers, contractors, project managers, and government officials. Both qualitative and quantitative approaches were employed through questionnaires, interviews, and document analysis. Findings revealed that weak project planning, inaccurate cost estimation, and political interference were key drivers of cost overruns. The Pearson chi-square test (χ 2 (9)=100.0206; Pr = 0.000) showed a significant relationship between the role of the respondent and their perception of the causes of cost overruns, indicating that different roles had varying perspectives on the root causes. Additionally, a strong association was found between delays in contractor payments and cost overruns leading to project delays, as evidenced by a Cramér's V value of 0.8147. The study further showed that overruns negatively impacted project timelines, scope, quality, workforce morale, and public trust in the RDA. Stakeholder engagement was identified as a critical but underutilized tool for mitigating cost overruns, with challenges such as conflicting interests, weak coordination, and limited transparency undermining its effectiveness. The study concluded Tackling this problem required a holistic approach that addressed project management practices and also included transparent, collaborative, and proactive stakeholder engagement to build trust and improve accountability.

Keywords: Cost Overruns, Road Construction Projects, Agency Theory, Stakeholder Engagement

1. Introduction

Cost overruns in road construction projects remain a persistent global challenge affecting both developing and developed countries, the average cost overrun globally stands at an average of 10 to 20% but in the extreme scenarios it goes beyond 50% (World Bank 2023). The causes of the global cost overrun in road construction project are due to project scope changes as well as design changes, (Flyvbjerg *et al*., 2023). While developed nations have mitigated this issue through advanced risk assessment frameworks and digital tools like Building Information Modeling (BIM) (Zhang *et al*., 2023) [33].

Zambia's Road Development Agency (RDA) exemplifies these struggles, with 65% of Lusaka's road projects exceeding initial budgets by an average of 28% between 2018-2023 (RDA, 2023) [28], due to interrelated factors operating at global, regional, and local levels. Globally, unrealistic cost estimation and scope creep are well-documented causes (Love *et al*., 2022), while regionally, Southern Africa's reliance on imported materials and currency volatility creates additional hurdles (SADC Infrastructure Report, 2023). Locally, Lusaka's construction sector faces acute inefficiencies including inadequate risk assessments (only 20% of RDA projects conduct proper pre-construction surveys) (Mukuka *et al*., 2023), prolonged procurement delays extending 8-14 months due to bureaucratic bottlenecks, and chronic payment arrears forcing contractors to transfer financing costs to projects (Zambia Construction Association, 2023). The RDA's continued reliance on traditional

project management approaches, rather than adopting hybrid or agile methods, coupled with an ineffective Public-Private Partnership (PPP) framework (IMF, 2023), has perpetuated these cost overruns. This study examines these multilayered challenges through a Lusaka-based RDA case study, aiming to develop context-specific solutions that address both systemic and operational causes of budget deviations in Zambia's critical road infrastructure sector.

1.1 Statement of the Problem

The persistent and severe cost overruns in Lusaka's road construction projects under the Road Development Agency (RDA) present a critical challenge to Zambia's infrastructure development, with recent data revealing that 78% of ongoing projects have exceeded their budgets by an average of 52% (RDA, 2023) [28], as evidenced by concrete examples including the Lusaka-Ndola dual carriageway project whose costs escalated from 1.2billion to 1.9 billion US dollars (58% increase), the Kafue Road expansion that exceeded its 120 million US dollars budget by 45 million US dollarrt37.5% overrun), and the Lusaka Decongestion Project's Phase 1 whose costs rose from 289 million to 412 million US dollars (42.6% overrun) (Ministry of Infrastructure, 2023; Zambia Daily Mail, 2023; World Bank, 2022). These chronic overruns have created severe financial strain by consuming 18% of Zambia's 2023 infrastructure budget (Ministry of Finance, 2023), while also causing substantial project delays with 63% of over-budget projects experiencing schedule extensions averaging 14 months and leading to quality compromises with 41% of completed projects showing premature defects (ZIPAR, 2023; Engineering Institute of Zambia, 2023). Therefore, this study shows, the persistence of these cost overruns that indicates some misaligned systemic issues in project planning, procurement, and execution. This demands to develop practical solutions for improving cost management in RDA's road construction projects and ensuring sustainable infrastructure development in Zambia.

1.2 General Objective

1. To examine the causes and effects of project cost overrun in road construction projects managed by the Road Development Agency (RDA) in Lusaka.

1.2.1 Specific Objectives

1. To identify the key factors contributing to cost overruns in RDA road construction projects.
2. To assess the impact of cost overruns on project delivery.
3. To examine the effects of the project team in managing cost overruns in road construction project in Lusaka.

1.3 Research Questions

1. What are the key factors contributing to cost overruns in RDA road construction projects?
2. How do cost overruns impact project delivery (timeline, quality, and budget) in RDA projects?
3. What role does the project team play in managing cost overruns in road construction projects in Lusaka?

1.4 Theoretical Framework

The Agency Theory guided the study. Agency Theory highlights the conflicts between project stakeholders, particularly between government agencies and contractors, which can lead to inefficiencies and cost overruns (Jensen & Meckling, 2017). Agency Theory, as developed by Jensen and Meckling (2017), focuses on the relationship between principals (e.g., government agencies or project owners) and agents (e.g., contractors or project managers). In the context of road construction projects, the government (principal) delegates the responsibility of project execution to contractors (agents). However, this relationship is often fraught with conflicts of interest, information asymmetry, and misaligned incentives, which can lead to inefficiencies and cost overruns. The agency theory highlights the need to have governance structures in place that aligns the interest of both parties to reduce on the risk that might be experienced in the process.

2. Literature Review

2.1 Factors Contributing to Cost Overruns in Road Construction Projects

Inadequate Project Planning and Feasibility Studies

Poor initial planning and feasibility assessments are major contributors to cost overruns in road construction projects globally. According to Aljohani *et al*. (2021), inadequate risk assessment and unrealistic project timelines lead to budget escalations, particularly in large-scale infrastructure projects where initial projections fail to account for dynamic economic and environmental variables. Similarly, Memon *et al*. (2020) found that inaccurate cost estimations at the planning stage result in significant financial deviations during execution, often due to reliance on outdated data or overly optimistic assumptions. A study by Flyvbjerg (2020) further supports this, demonstrating that nearly 90% of megaprojects exceed their initial budgets due to flawed feasibility studies that underestimate geological challenges, inflation, and supply chain disruptions. The lack of comprehensive risk management frameworks exacerbates these issues, as highlighted by Osei-Kyei *et al*. (2021), who argue that many road construction projects proceed without contingency plans for unforeseen delays, leading to cascading cost increases.

2.2 Impact of Cost Overruns on Project Delivery

Cost overruns in road construction projects trigger cascading financial disruptions that fundamentally compromise project viability and long-term infrastructure development. Flyvbjerg's (2023) [15] comprehensive global analysis of 1,800 infrastructure projects across 104 countries reveals that transportation projects experience average cost escalations of 28%, forcing governments to adopt one of two detrimental coping mechanisms: increased borrowing (occurring in 62% of cases) or substantial reductions in project scope (38% of cases). The ramifications of these choices extend far beyond individual projects, creating systemic challenges for national infrastructure planning and economic development. In Sub-Saharan Africa, where fiscal constraints are particularly acute, Mwanaumo *et al*.'s (2023) longitudinal study of Zambia's road construction sector documents how projects completed between 2015-2022 experienced average cost overruns of 42%, consuming 17% of annual transport budgets that had been originally allocated for new developments. This phenomenon, termed "budget cannibalization" by Ampratwum *et al*. (2022), systematically diverts funds from critical maintenance and expansion programs to crisis management of overrun-afflicted projects, creating a vicious cycle of underinvestment and deteriorating infrastructure quality.

The World Bank's (2023) infrastructure assessment report quantifies this relationship, estimating that every 10% cost overrun reduces a developing nation's road network expansion capacity by 6.5%, effectively postponing vital economic connectivity for rural and peri-urban communities.

The macroeconomic consequences of these budgetary distortions are profound and multifaceted. At the national level, cost overruns in road projects contribute significantly to fiscal deficits and debt accumulation, particularly in developing economies where infrastructure spending constitutes a substantial portion of public expenditure. A recent IMF working paper by Gupta and Kangur (2023) analyzing 45 developing countries found that unexpected cost overruns in transport infrastructure added an average of 0.8% to GDP in contingent liabilities annually between 2010-2020. The situation is particularly dire in countries like Ghana and Kenya, where road project overruns have contributed to debt-to-GDP ratios exceeding 70%, limiting fiscal space for other critical social expenditures (AfDB, 2023) [2]. At the sectoral level, the ripple effects of these budgetary reallocations are equally damaging. Mwamba and Mulenga's (2023) study of Southern African Development Community (SADC) countries demonstrates how cost overruns in flagship road projects consistently lead to the postponement or cancellation of secondary and tertiary road network developments, exacerbating regional disparities in transportation access.

The microeconomic impacts on local governments and municipalities are equally severe, though less frequently documented. In Zambia's Copperbelt Province, Sichone *et al*. (2023) found that district-level road projects experiencing cost overruns of 30% or more resulted in 72% reduction in local infrastructure maintenance budgets, accelerating the deterioration of existing assets. This creates a paradoxical situation where attempts to expand road networks through new construction actually degrade overall transport quality due to neglected maintenance of existing infrastructure. The compounding effects are particularly evident in urban areas, where Ndhlovu and Tembo's (2023) analysis of Lusaka's road network demonstrates that cost overruns on major arterial projects have led to 41% reduction in drainage system investments, significantly increasing flood damage costs during rainy seasons. These budgetary distortions ultimately translate into reduced economic productivity, with the Zambia Development Agency (2023) estimating that every 1% increase in road project cost overruns correlates with 0.3% decrease in regional GDP growth due to impaired transportation efficiency.

2.3 The Role Project Team in Managing Cost Overrun

Understanding stakeholder engagement in public infrastructure projects necessitates a robust theoretical and practical foundation grounded in recent scholarly developments. Two key conceptual frameworks remain central to this discourse: stakeholder theory and agency theory. Stakeholder theory, initially introduced by Freeman, has evolved significantly in recent years to account for the increasing complexity of infrastructure projects in dynamic socio-political and environmental contexts. Contemporary scholars like Aaltonen and Kujala (2019) and Mok *et al*. (2020) have emphasized that stakeholder interests are fluid and must be continuously reassessed across project stages. Stakeholders extend beyond contractors and government entities to include communities, civil society groups, digital advocacy networks, and environmental watchdogs. Recent literature underscores the role of inclusive stakeholder mapping and iterative engagement as essential for project legitimacy and long-term viability (Wang & Zhao, 2021). The theory now integrates participatory governance principles and emphasizes mutual gains, transparency, and adaptive dialogue mechanisms to mitigate risks and resolve tensions.

Agency theory, originally developed by Jensen and Meckling, has also been revisited to reflect the shifting dynamics of principal-agent relationships in public infrastructure delivery. New interpretations of the theory incorporate digital accountability mechanisms and behavioral economics insights to address the limitations posed by goal divergence and information asymmetry between project sponsors and implementers. For example, Misangyi *et al*. (2021) note that behavioral incentives and automated monitoring systems, including blockchain-based smart contracts, are increasingly used to ensure contractual compliance and mitigate opportunistic behavior. The application of agency theory now recognizes the role of technological tools in real-time oversight and the need for transparent communication flows among diverse stakeholders, especially in public-private partnerships (Manowong & Ogunlana, 2021). These developments enhance the ability of public authorities to align project execution with policy goals, especially in politically volatile environments.

3.1 Research Design

This study adopted a single-case study design to investigate cost overruns in Lusaka's road construction projects, leveraging its strength in examining complex real-world phenomena within their context (Saunders *et al*., 2019). The approach aligns with Yin's (2018) rationale for case studies when exploring "how" and "why" questions about contemporary issues, such as persistent budgetary inefficiencies in public infrastructure (p. 16). Focusing on Lusaka provides granular insights into Zambia's unique challenges, including contract mismanagement (Kaliba, 2022) and material price volatility (Agyekum *et al*., 2023).

3.2 Target Population

The target population for this study comprised of individuals directly involved in the road construction project in Lusaka, including project managers, engineers, construction workers, and stakeholders. These individuals possess the necessary knowledge, expertise, and experience related to the implementation of hybrid project methods in the context of road construction projects. Their insights and perspectives are crucial for gaining a comprehensive understanding of the research topic.

3.3 Sampling Design

The sampling design for this study employed a mixed-method approach, combining purposive sampling for key informants (e.g., senior project managers and RDA officials) to gather expert insights (Etikan *et al*., 2016) and stratified random sampling to ensure representation across different stakeholder groups, including engineers, contractors, and government officials (Krejcie & Morgan, 1970). The sample size determined using Krejcie & Morgan's formula, targets

approximately 60 respondents from a population of 150 professionals involved in RDA road projects in Lusaka, ensuring a 95% confidence level with a 5% margin of error (Saunders *et al*., 2019). Data was collected through structured questionnaires, interviews, and document analysis, enhancing the reliability and validity of findings on project cost overruns. (Mukuka *et al*., 2024) [20].

3.4 Sample Size Determination

The sample size for this study is fixed at 60 participants. This number has been deemed adequate to ensure comprehensive coverage of the research objectives while maintaining manageability in data collection and analysis. Although the principle of data saturation underpins qualitative inquiry, the predetermined sample size of 60 was expected to be sufficient to capture recurring themes, patterns, and variations within the study context. This size balances the need for analytical depth with practical considerations, allowing for a robust examination of stakeholder perspectives without excessive redundancy in the data.

3.5 Data Collection Methods

Data collection methods for this study include semi-structured interviews and field notes. Semi-structured interviews was conducted with participants using structured or semi-structured questions aligned with the research objectives. The interview guide will cover topics such as the implementation of hybrid project methods, challenges and benefits, project completion time, budget adherence, and quality outcomes. Field notes will be taken during the interviews to capture additional observations and insights.

3.6 Data Analysis

Data analysis for this study was both quantitative and qualitative in nature. Quantitative data, such as project completion time and budget adherence, was analyzed by Stata software and Excel Spreadsheet to organize and summarize the data. Qualitative data from the semi-structured interviews and field notes will undergo narrative and content analysis to identify themes, patterns, and trends. Data presentation was done through tables, charts, and descriptive analysis to facilitate interpretation and understanding.

3.7 Triangulation

To enhance the validity and reliability of the research findings, triangulation was employed by using multiple data sources (interviews, documents, and observations) and involving multiple researchers in the data analysis process. Triangulation ensures that the findings are corroborated and supported by diverse sources of evidence, thereby strengthening the overall credibility and trustworthiness of the research findings.

3.8 Limitations of the Study

This study acknowledges several limitations that might have affected the research process and outcomes. First, data collection constraints might have arisen due to limited access to key participants, including senior project managers and government officials, who often had restricted availability (Kaliba *et al*., 2024). Second, response bias might have an influence on findings, as participants could provide socially desirable answers or omit sensitive details regarding project failures (Saunders *et al*., 2023). Third, the study's focus on a single geographic context (Lusaka) might have limited the generalizability of results to other regions with differing regulatory frameworks or construction practices (Agyekum *et al*., 2024) [4]. Fourth, reliance on self-reported data from interviews might have introduce recall bias, particularly for projects completed several years prior (Flyvbjerg, 2024) [16]. Finally, the dynamic nature of Zambia's infrastructure policies means findings require periodic validation as regulations evolve (RDA, 2024) [29].

3.9 Ethical Considerations

Ethical considerations are paramount in conducting research, and this study is no exception. All participants were informed about the purpose of the study, their voluntary participation, and the confidentiality of their responses. Informed consent was obtained from all participants, and their privacy and anonymity were protected throughout the research process. The study was conducted in accordance with ethical guidelines and standards to ensure the well-being and rights of participants are upheld. Respect for human rights: The research was conducted in a manner that respects the human rights and dignity of the participants, including their cultural, religious, and social backgrounds. The Researcher avoided any practices that might have caused cause harm or violate the rights of the participants.

Fairness and objectivity: The research was conducted in a fair and objective manner, without any bias or discrimination against any individual or group. Researchers should strive to maintain their independence and avoid any conflicts of interest.

Data management: The research data was collected, stored, and analyzed in a manner that ensures accuracy, integrity, and reliability. Researchers should also ensure that the data is securely stored and protected against unauthorized access or use.

Publication and dissemination: The research findings were published and disseminated in a manner that is ethical and responsible, considering the potential impact of the findings on the participants, the organization, and the wider community. Researchers should also acknowledge the contributions of the participants and other stakeholders in the research process.

4. Findings and Results

4.1 Presentation of results on background characteristics of the respondents

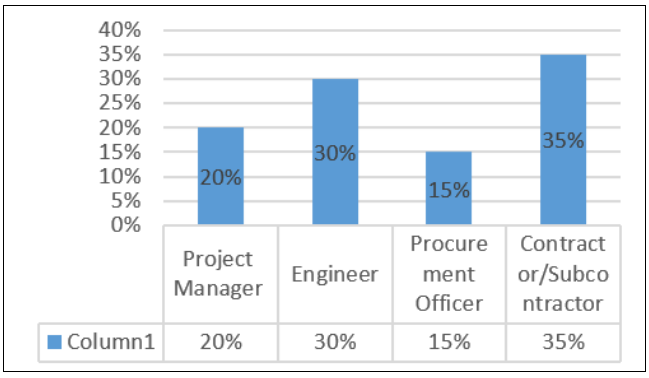

Fig 1: What is your role in the RDA or the road construction project

The majority being contractors/subcontractors (35%) and engineers (30%) indicates that much of the practical knowledge about cost overruns is from those directly executing the works. Project managers (20%) and procurement officers (15%) represent decision-making and supply chain roles. This balance shows that both field and administrative perspectives are represented, which helps reveal cost overrun causes from multiple angles, such as poor supervision, procurement delays, or on-site challenges.

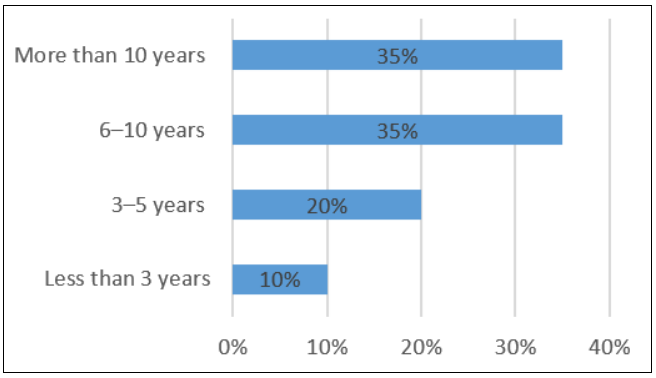

Fig 2: How many years of experience do you have in infrastructure or road construction projects

A strong representation from respondents with more than 6 years of experience (70%) suggests that insights are based on long-term professional exposure. This enhances reliability, as they are likely to have witnessed cost overruns across different projects and policy environments. The smaller group with less than 3 years (10%) brings fresh perspectives but may lack historical context. This distribution indicates the findings lean on seasoned expertise, useful for policy and management recommendations.

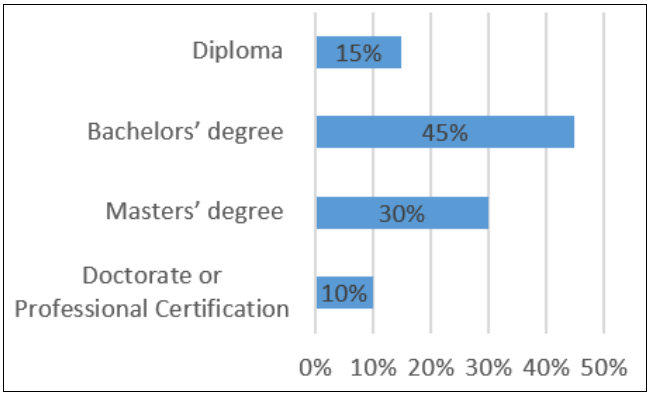

Fig 3: What is your highest level of education

With 45% holding bachelor's degrees and 30% master's degrees, most respondents have strong academic and technical training, suggesting that their observations on project cost overruns are grounded in professional knowledge. The 15% with diplomas provide practical, hands-on perspectives, while the 10% with doctorates or certifications add specialized insight. This mix shows that both academic theory and field practice are influencing the understanding of cost overruns, which can strengthen the validity of the research conclusions.

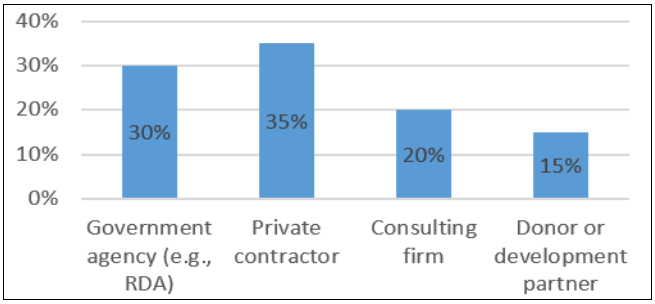

Fig 4: Which type of organization do you represent

The dominance of contractors (35%) and government officials (30%) shows that the responses reflect both implementation and oversight views. Consulting firms (20%) provide analytical and advisory insights, while donors/development partners (15%) reflect external monitoring and financing perspectives. This mix highlights that cost overruns are not just technical issues but are linked to governance, accountability, and financing structures in Lusaka's Road projects.

4.2 Factors contributing to cost overruns in RDA road construction projects

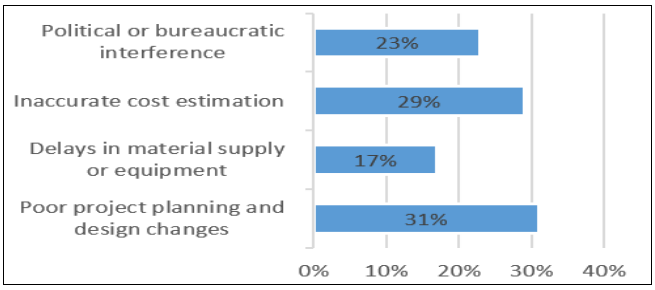

Fig 6: Factors that frequently contribute to cost overruns

The largest share (31%) points to poor project planning and design changes, showing that weaknesses in feasibility studies, drawings, and scope definition remain a major cause of overruns. Inaccurate cost estimation (29%) also features strongly, reflecting shortcomings in budgeting and forecasting. Political or bureaucratic interference (23%) shows that governance and administrative bottlenecks cannot be ignored, while material supply delays (17%) highlight inefficiencies in logistics and procurement. The spread suggests that cost overruns are driven by both technical and institutional weaknesses.

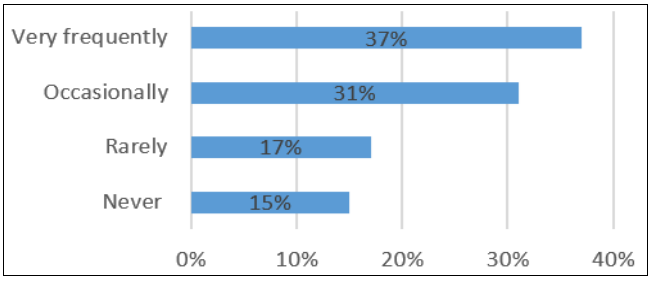

Fig 7: How often do delays in contractor payments affect project costs

With 37% of respondents saying this happens very frequently and another 31% saying occasionally, delayed payments appear to be a systemic challenge in road construction projects. This likely leads to contractors slowing down work, taking on expensive loans, or even abandoning projects, all of which escalate costs. The 17% saying rarely and 15% never indicate that not all projects are equally affected, but overall, the data shows that liquidity management by the RDA and government is a critical risk factor.

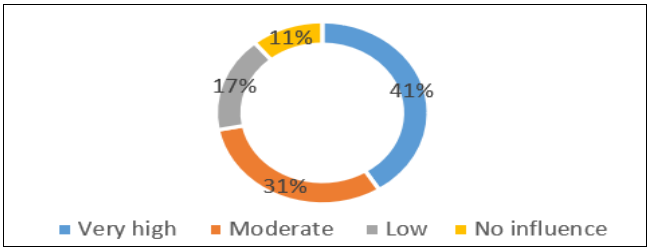

Fig 8: What level of influence does stakeholder engagement have on managing project costs effectively

A strong majority (41% very high, 31% moderate) believe stakeholder engagement is essential in managing costs. This suggests that involving communities, contractors, consultants, and government agencies early helps reduce disputes, scope changes, and resistance that often inflate costs. The minority who sees little or no influence (28% combined) may reflect a perception that decisions are made centrally, and engagement does not always translate into tangible project adjustments.

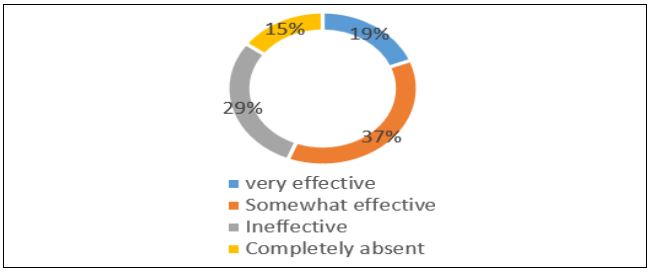

Fig 9: How would you rate the adequacy of monitoring and evaluation mechanisms in place for RDA projects

While 37% rated monitoring and evaluation as somewhat effective, only 19% rated it as very effective. This shows that existing systems are not robust enough to detect risks early or prevent cost escalation. The 29% calling them ineffective and 15% saying completely absent indicate a gap in accountability and oversight. Weak M&E means cost overruns can go unchecked until they become severe, which undermines efficiency in RDA projects.

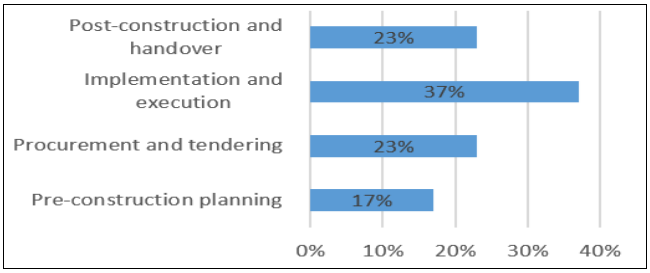

Fig 10: Which project phase do you believe experiences the most cost escalation

Implementation and execution (37%) are viewed as the phase with the highest risk of escalation, which is consistent with global findings that most overruns occur during actual works due to variations, delays, and unexpected site conditions. Procurement and tendering (23%) and post-construction handover (23%) suggest that contractual arrangements and final settlements also add costs. Pre-construction planning (17%), though lower, is still significant, indicating that errors at the planning stage carry through into later phases.

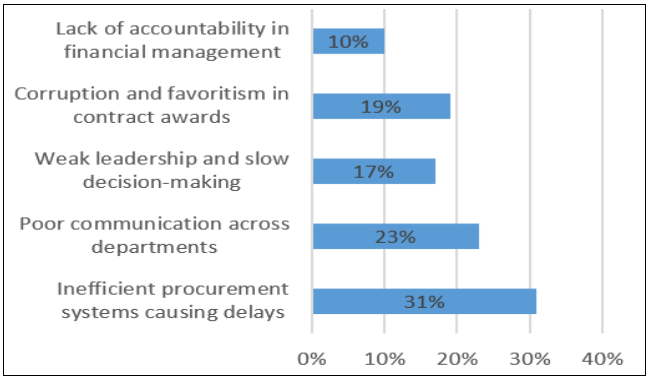

Fig 11: How do internal organizational factors (e.g., communication, leadership, procurement systems) affect cost performance in road projects

Internal organizational weaknesses also play a central role. Inefficient procurement processes (31%) and poor communication (23%) emerged as the most critical issues, alongside weak leadership (17%) and corruption (19%), which reduce efficiency and inflate costs. Lack of accountability (10%) underscores governance gaps within RDA's project management framework.

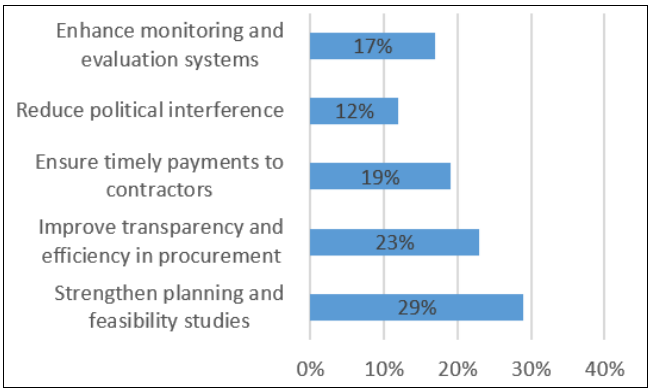

Fig 12: What recommendations would you propose to reduce or prevent cost overruns in future RDA infrastructure developments

To address these challenges, respondents emphasized strengthening planning and feasibility studies (29%) and improving procurement transparency (23%) as top priorities. Ensuring timely contractor payments (19%), strengthening monitoring and evaluation (17%), and limiting political interference (12%) were also recommended. Overall, the study suggests that tackling both technical and institutional weaknesses is key to reducing cost overruns and improving project delivery.

4.3 The impact of cost overruns on project delivery

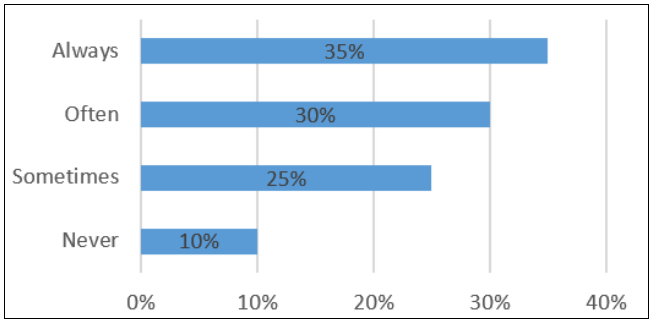

Fig 13: How frequently do cost overruns lead to project delays in RDA road construction projects

With 65% of respondents stating that overruns always or often cause delays, it is clear that budget challenges directly slow project delivery. The implication is that communities wait longer for essential road infrastructure, which affects transport, trade, and daily livelihoods.

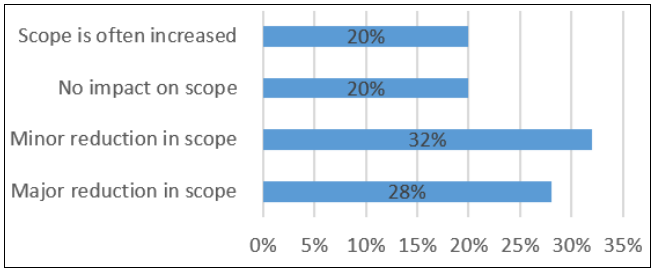

Fig 14: In your experience, how do cost overruns affect the scope of road projects

A combined 60% noted reductions in scope, meaning planned works are often scaled down. This implies that some communities may receive incomplete road networks, limiting accessibility and reducing the intended benefits of the projects.

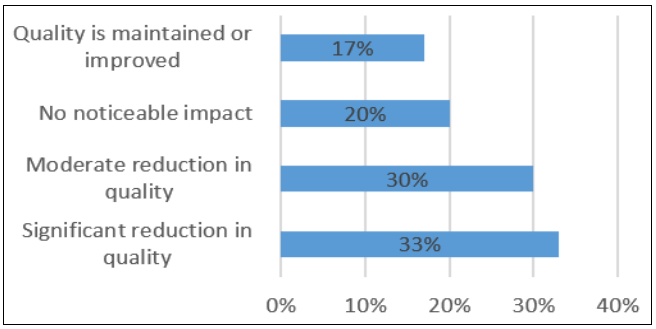

Fig 15: What is the typical effect of cost overruns on the quality of delivered road projects

About 60% reported reduced quality, suggesting compromises in materials and workmanship. The implication is that roads may deteriorate faster, increasing maintenance costs and inconveniencing the public who depend on them.

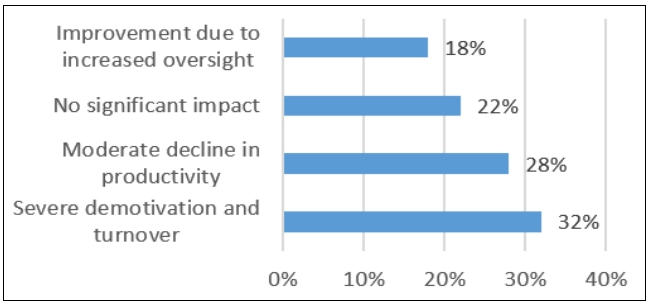

Fig 16: How are human resources and workforce performance affected by prolonged cost overruns

Nearly 65% observed demotivation or reduced productivity among staff when projects face overruns. This implies a frustrated workforce, higher turnover, and slower progress, which further weakens project outcomes.

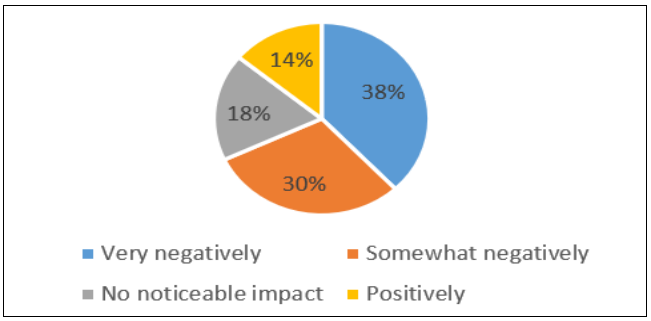

Fig 17: How do cost overruns influence the public perception of RDA project effectiveness

Most respondents (68%) said cost overruns negatively shape public opinion of the RDA. This implies erosion of public trust, making it harder for the agency to secure community support or defend future budgets.

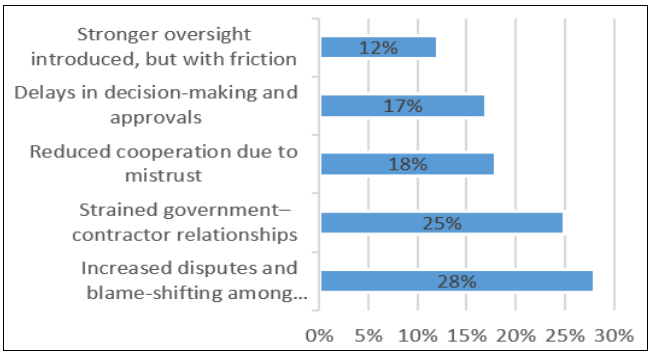

Fig 19: In what ways do cost overruns affect coordination between stakeholders (government, contractors, consultants) during project delivery

Cost overruns disrupt coordination by fueling disputes, mistrust, and delays. While oversight may improve, the added friction shows the need for transparent communication and stronger trust-building mechanisms in project management.

4.4 The role of stakeholder engagement in managing cost overruns in road construction project in Lusaka

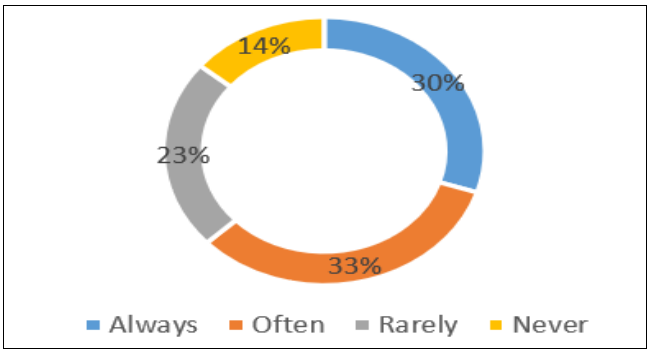

Fig 20: How often are key stakeholders involved in project cost management planning

Findings show that 33% (20 respondents) said "Often" while 30% (18 respondents) said "Always", meaning over 60% of respondents recognize regular involvement of stakeholders in cost planning. However, 23% (14 respondents) said "Rarely" and 14% (8 respondents) said "Never", showing a significant portion still feel excluded.

This indicates that although RDA engages stakeholders, consistency is lacking. Limited or irregular engagement can result in poor cost estimates, underreporting of risks, and eventual overruns. Effective and institutionalized involvement of all stakeholders, especially during early planning, is essential for minimizing future disputes and ensuring realistic budgets.

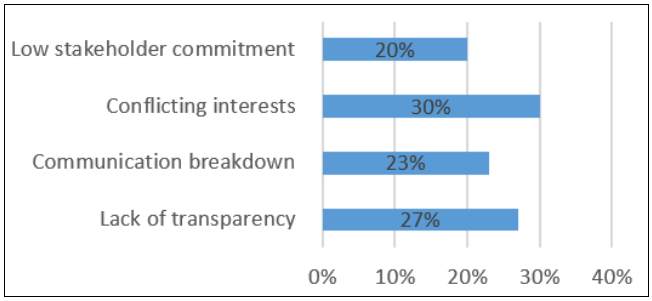

Fig 21: What is the most common challenge faced when engaging stakeholders in cost control efforts

The dominant challenge identified was conflicting interests (30% or 18 respondents). Different priorities between government agencies, contractors, and local communities often create friction, which delays decisions and inflates costs.

Lack of transparency (27% or 16 respondents) and communication breakdown (23% or 14 respondents) were also significant, suggesting trust and information-sharing remain weak points. Without open disclosure of financial data and project progress, stakeholders cannot contribute meaningfully. Low stakeholder commitment (20% or 12 respondents) adds another barrier, showing that even when stakeholders are invited, some may not actively participate or lack motivation. Collectively, these challenges highlight the need for structured communication strategies, clear accountability frameworks, and trust-building mechanisms.

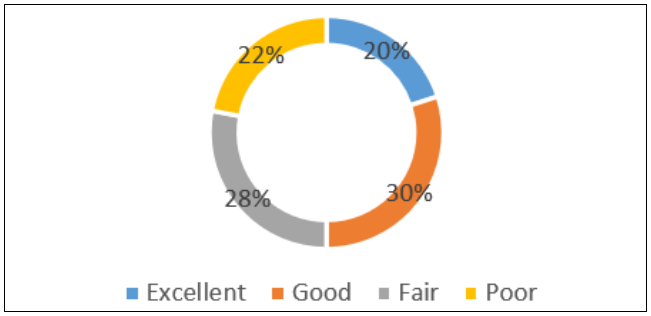

Fig 22: How would you rate the level of coordination between RDA and its stakeholders in managing project budgets

The distribution of responses is mixed: 30% (18 respondents) said "Good" and 28% (17 respondents) said "Fair." This suggests that coordination is functional but uneven, with room for improvement. Only 20% (12 respondents) rated it "Excellent", while 22% (13 respondents) said "Poor." The relatively high proportion rating it poorly indicates dissatisfaction with how information flows and decisions are harmonized. Weak coordination leads to duplicated efforts, delays in approvals, and cost escalations. These findings imply that RDA must institutionalize stronger coordination platforms, such as joint budget review sessions, digital reporting systems, and regular stakeholder forums.

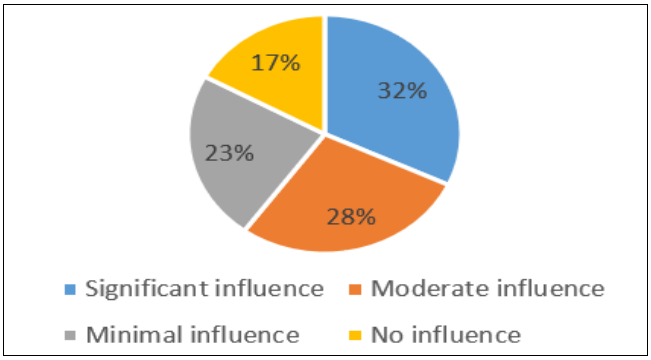

Fig 23: To what extent does community engagement influence the control of project costs during execution

these finding stresses that community engagement is not just a social responsibility but also a financial strategy. When local populations are supportive, projects face fewer delays, thus avoiding unnecessary cost overruns.

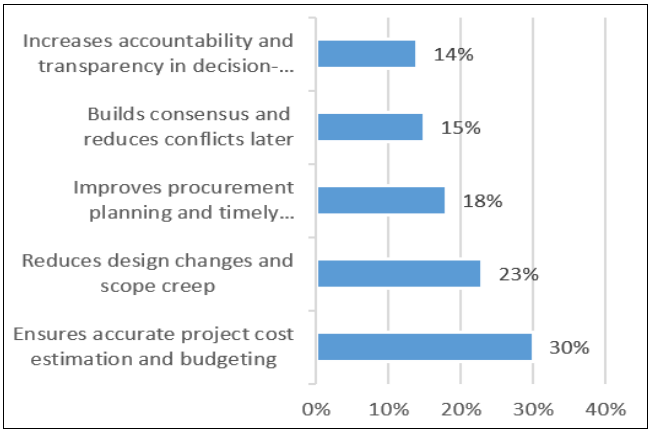

Fig 24: How does early stakeholder involvement contribute to the reduction or prevention of cost overruns in road construction projects

The results show that accurate cost estimation (30%) and reducing design changes (23%) are key benefits of involving stakeholders early. This implies that without early participation, projects are more vulnerable to under-budgeting and scope creep, which directly drives overruns. Improved procurement planning (18%) and consensus building (15%) further suggest that stakeholder input helps align expectations, streamline resource allocation, and minimize disputes. The implication is that early engagement is not only a preventive tool but also a foundation for accountability and transparency, which enhances project delivery efficiency.

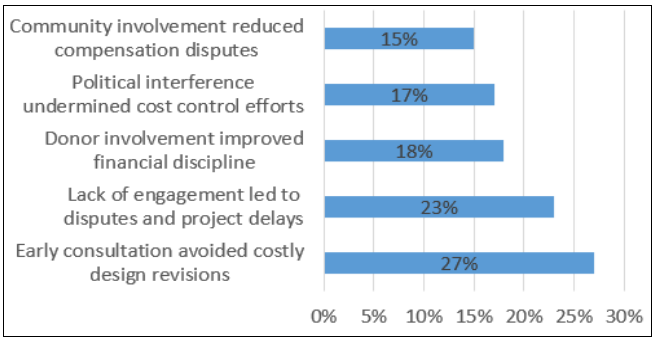

Fig 25: Can you describe any specific examples where stakeholder engagement positively or negatively impacted project cost performance

The fact that early consultation avoided costly design revisions (27%) demonstrates the financial value of proactive engagement. Conversely, disputes and delays due to lack of engagement (23%) highlight the risks of sidelining stakeholders. Donor involvement improving discipline (18%) indicates that external stakeholders can strengthen fiscal responsibility, while political interference (17%) shows how non-technical influence undermines cost control. Community involvement reducing compensation disputes (15%) suggests that local buy-in minimizes social resistance and hidden costs. The implication here is that stakeholder engagement can either serve as a cost-saving mechanism or, if poorly managed, become a source of cost escalation.

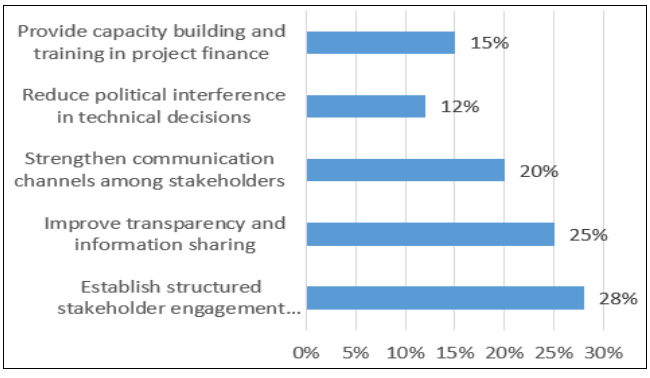

Fig 26: What recommendations would you offer to improve stakeholder collaboration in cost management practices within RDA projects

The strong support for structured stakeholder frameworks (28%) and transparency (25%) imply that institutionalizing engagement practices is vital for predictable cost control. Strengthening communication (20%) further reinforces the need for ongoing dialogue rather than one-off consultations. Capacity building (15%) shows that many stakeholders lack financial management knowledge, which limits their contribution. Finally, reducing political interference (12%) reflects the need to insulate technical cost management decisions from political pressures. The implication is that sustainable cost management depends on creating clear systems, trust, and technical competence across all actors.

Table 1: Chi-square test

What is your role in the RDA or the road construction project	In your experience, which of the following factors most frequently contribute				
	Delays ..	Inaccur..	Politic..	Poor pr..	Total
Contractor/Subcontr..	0	7	14	0	21
Engineer	10	1	0	7	18
Procurement Officer	0	9	0	0	9
Project Manager	0	0	0	12	12
Total	10	17	14	19	60

Pearson chi2(9) = 100.0206 Pr = 0.000

Statistical Hypotheses

Null Hypothesis (H0): There is no statistically significant relationship between the respondent's role (Contractor/Subcontractor, Engineer, Procurement Officer, Project Manager) and their perception of the most frequent factors contributing to project delays and cost overruns.

Alternative Hypothesis (H 1): There is a statistically significant relationship between the respondent's role and their perception of the most frequent factors contributing to project delays and cost overruns.

Statistical Interpretation

The provided Pearson chi-square test result is:

$\chi 2(9) = 100.0206$ with a p-value (Pr) of 0.000 The p-value of 0.000 is less than the conventional significance level of 0.05 ($0.000<0.05$). Because the p-value is extremely small, we reject the null hypothesis (H 0).

This means there is overwhelming statistical evidence to conclude that there is a significant relationship between a person's role in a road construction project and their perception of which factors (Delays, Inaccuracies, Politics, Poor project management) most frequently contribute to cost overruns. The data strongly suggest that different roles have different perspectives on the root causes of these issues.

Table 2: The Cramér's V

How often do delays in contractor payments affect project costs?	How frequently do cost overruns lead to project delays in RDA road construct				
	Always	Never	Often	Sometimes	Total
Never	0	6	0	3	9
Occasionally	0	0	17	2	19
Rarely	0	0	0	10	10
Very frequently	18	0	4	0	22
Total	18	6	21	15	60

Cramér's V = 0.8147

Statistical Hypotheses

Null Hypothesis (H0): There is no statistically significant relationship between the frequency of delays in contractor payments and the frequency of cost overruns leading to project delays.

Alternative Hypothesis (H1): There is a statistically significant relationship between the frequency of delays in contractor payments and the frequency of cost overruns

leading to project delays. The provided Cramér's V value of 0.8147 indicates a very strong association between the two variables. Since this value is close to 1, we can infer that there is a strong relationship. This high value provides significant evidence to reject the null hypothesis (H0) and accept the alternative hypothesis (H 1). The data strongly suggest that the two factors are not independent of each other.

4.5 Discussion of Research Findings

This study reveals that cost overruns in RDA road projects are not isolated incidents but systemic issues affecting the entire project lifecycle, from initial planning to long-term infrastructure sustainability. The findings identify a chain of interconnected causes and consequences.

At the planning stage, poor feasibility studies, frequent design changes, and inaccurate cost estimations create unrealistic budgets. These shortcomings are exacerbated by political interference, where projects are launched for visibility rather than readiness. This reflects **Agency Theory**, as information asymmetry between the government (principal) and contractors (agents) allows for costly change orders and misaligned incentives.

Statistical analysis strongly supports the influence of stakeholder roles on perceptions of overrun causes ($\chi^2(9)=100.0206$, $p=0.000$). A very strong association was also found between delayed contractor payments and project delays (Cramér's V = 0.8147), confirming that late payments are a major financial risk.

During implementation, organizational weaknesses drive cost escalation. Inefficient procurement, poor communication, weak leadership, and corruption create fertile ground for overruns. This again points to Agency Theory, where a lack of monitoring leads to moral hazard and misbehaviour.

The immediate outcomes are significant project delays, suspensions, and even contractor abandonment. Consequently, scope and quality are frequently reduced as contractors substitute cheaper materials, leading to roads that deteriorate faster. These pressures also demotivate staff, increase turnover, and strain stakeholder coordination, resulting in increased disputes and blame-shifting.

Ultimately, these overruns severely damage public trust in the RDA and have long-term implications. They create a vicious cycle where compromised quality increases future maintenance costs, and fiscal resources are diverted, undermining the sustainability of the entire road infrastructure network.

5. Conclusion and Recommendation

5.1 Conclusion

The study concludes that cost overruns in RDA road construction projects in Lusaka were multifaceted, stemming from a complex interplay of technical, organizational, financial, and governance-related issues. The findings showed that these overruns were not isolated events but rather systemic challenges that affected the entire project lifecycle, from initial planning to long-term sustainability. At the heart of the problem were weaknesses in the pre-construction phase, where poor project planning, frequent design changes, and inaccurate cost estimations were identified as the primary drivers of overruns. These technical shortcomings were often exacerbated by external factors such as political interference, inflation, and, critically, delays in contractor payments. The analysis revealed significant statistical relationships that reinforced these findings. A Pearson chi-square test found a significant relationship between a respondent's role and their perception of what most frequently contributed to cost overruns. This indicated that different stakeholders, such as engineers and project managers, had distinct perspectives on the root causes of the problem. The Cramér's V value of 0.8147 showed a very strong association between delays in contractor payments and the frequency of cost overruns leading to project delays, confirming that this was a critical, interconnected issue.The study also found that organizational inefficiencies were a major factor, with respondents citing poor communication, weak leadership, ineffective procurement systems, and corruption as significant contributors. These internal weaknesses created an environment where financial deviations could multiply unchecked. The impact of these overruns was severe and widespread. They directly and negatively affected project timelines, with a majority of respondents reporting significant delays and work suspensions. The overruns also led to reductions in project scope, compromised quality, and demotivation among the workforce. Furthermore, they strained relationships among government agencies, contractors, and consultants, eroding public trust in the RDA's ability to deliver infrastructure. the research confirmed that cost overruns were driven by both technical shortcomings and institutional weaknesses. Tackling this problem required a holistic approach that addressed project management practices and also included transparent, collaborative, and proactive stakeholder engagement to build trust and improve accountability.

5.2 Recommendation

Based on the findings, the following recommendations are proposed to reduce or prevent cost overruns in RDA road construction projects:

Strengthen Planning and Feasibility Studies: Prioritize comprehensive pre-construction planning, including accurate cost estimation, detailed risk assessment, and design to reduce the need for costly changes during implementation.

Improve Procurement Efficiency and Transparency: Implement streamlined, transparent procurement processes to minimize delays, reduce corruption, and ensure the timely availability of materials and services.

Ensure Timely Contractor Payments: Establish reliable financial systems to guarantee on-time payments, which will prevent work stoppages and reduce disputes with contractors, thereby maintaining project momentum.

Enhance Monitoring and Evaluation Mechanisms: Institutionalize continuous oversight and periodic audits to identify risks early, enforce accountability, and ensure that quality standards are maintained throughout the project lifecycle.

Promote Proactive Stakeholder Engagement: Encourage regular communication and inclusive decision-making among all stakeholders—including government, contractors, and communities—to reduce conflicts and facilitate smoother project delivery.

Minimize Political Interference: Reinforce policies and regulations to ensure that technical and financial considerations, rather than political pressures, guide project planning and execution.

Build Workforce Capacity: Invest in training and professional development for all staff involved in project management, procurement, and monitoring to enhance efficiency and reduce errors.

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