Assessment of Risk Identification Factors on Construction Costs for Tanzania's Judiciary Construction Projects

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Abstract

This study examines risk identification factors and their impact on construction costs in the Judiciary of Tanzania's projects. Using a mixed methods approach with data from 119 respondents, including project managers and judiciary executives, the research explores risk identification and management within a theoretical framework. Findings revealed that a structured risk management approach improves cost control and efficiency, identifying key risk factors such as financial constraints, stakeholder communication gaps, and regulatory challenges. Recommendations include implementing training programs, formalizing risk management policies, and enhancing stakeholder communication. The implication of the research outcome is that the importance of proactive risk management in optimizing resources and achieving successful project outcomes in public-sector construction.

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1. Introduction

Globally, the construction industry is highly susceptible to a wide range of risks that can significantly impact project outcomes, particularly in the public sector. These risks include cost overruns, delays, quality issues, and stakeholder mismanagement, all of which can undermine the effectiveness of public service delivery and erode public trust (Ahmed, 2022; Dimoso & Andrew, 2021). The complexity of construction projects, driven by various stakeholders, unpredictable environmental conditions, and financial uncertainties, necessitates effective risk management to mitigate adverse outcomes (Flanagan & Norman, 1993; Bunni, 2009). This is particularly true in developing countries like Tanzania, where economic instability, insufficient infrastructure, and bureaucratic inefficiencies exacerbate the risks faced by construction projects (Abdul-Rahman, 2020; Kitole & Sesabo, 2024).

In Tanzania, the public sector—including the judiciary—has undertaken significant infrastructure development projects to improve the accessibility and quality of judicial services. However, many of these projects face significant challenges, particularly with adhering to budgets and timelines due to inadequate risk management practices. A review of the Judiciary of Tanzania Annual Report (2021) shows that several projects exceeded their budgets by up to 30%, largely due to unforeseen risks and inadequate planning. For instance, the High Court construction project in Dar es Salaam, initially budgeted at TZS 12 billion, encountered a 25% cost overrun (Judiciary of Tanzania, 2021). Similar issues were observed in the rehabilitation of district court buildings in Dodoma and the construction of new court facilities in Shinyanga, where budget overruns ranged from 20-30% (Tanzania Controller and Auditor General Report, 2022). These cost overruns are not unique to Tanzania and are consistent with global findings that suggest poor risk identification and mitigation are major causes of cost escalations (Flyvbjerg, 2003; Smith et al., 2014; Kikwasi, 2017).

The primary reason behind these cost overruns lies in the absence of structured risk management frameworks within the judiciary's construction projects. Projects often fail to identify and mitigate risks early in the lifecycle, resulting in delays, budget escalations, and substandard project quality (Laryea, 2008; Goh & Abdul-Rahman, 2021). This is further compounded by poor communication among stakeholders and the lack of financial oversight. Existing frameworks, such as the Public Procurement Act of 2016, have introduced regulatory measures to streamline project management and ensure accountability, but inconsistencies in their application remain (NAO, 2022; Kitole & Utouh, 2023). This inconsistency highlights the need for comprehensive reviews and reforms in risk management strategies, as well as better enforcement of existing policies. Stakeholder involvement, financial constraints, and bureaucratic inefficiencies have all been identified as critical risk factors contributing to these challenges (Abd El-Karim et al., 2017; Enshassi & Mayer, 2005).

The research gap lies in the insufficient empirical studies examining the specific risk management challenges and their impact on construction costs within Tanzania's judiciary sector. Given the critical role that the judiciary plays in ensuring justice, it is concerning that there is a lack of context-specific research addressing how institutional inefficiencies, socio-economic factors, and governance issues within the Tanzanian judiciary contribute to poor risk management in construction projects. These challenges undermine the successful delivery of judicial infrastructure projects, impacting both project outcomes and the broader justice system. This study aims to fill this gap by assessing risk identification practices in relation to construction costs, with a focus on improving judicial infrastructure to support a

more effective and equitable justice system in Tanzania. Recent studies in Tanzania highlight critical gaps in risk management and its impact on construction costs, particularly within public projects. Research by Mtana (2007) and Kikwasi (2011) shows that insufficient risk management knowledge, inadequate formal risk communication procedures, and a lack of holistic approaches contribute to project delays and cost overruns.

However, existing literature primarily addresses general risk management principles or focuses on construction projects in developed countries, which may not fully capture the complexities of the Tanzanian judiciary context. This mismatch highlights a need for targeted research to bridge the gap and inform effective, localized risk and cost management strategies for judiciary construction projects in Tanzania. Addressing the specific challenges and mitigation strategies within construction projects under the Judiciary of Tanzania in risk management is essential for improving the success of judiciary construction projects and aligning them with Tanzania's national development priorities, including infrastructure development (SDG 9) and justice (SDG 16). As risk management practices directly influence project costs and timelines, ensuring robust strategies will enhance the effectiveness of these projects, making them more predictable and reliable (Eriksson & Laan, 2007; Edwards & Bowen, 2005). Therefore, this study assesses risk management practices on construction project costs under the Judiciary of Tanzania. Specifically, it assesses risk identification, risk assessment factors and risk management strategies in the Judiciary of Tanzania Construction Project Costs.

3. Empirical Review

The empirical review on the association between effective risk management practices and construction cost control has been extensively explored in recent research, particularly in the context of construction projects in developing economies like Tanzania. The identification of risks early in the project lifecycle is critical in ensuring that potential cost drivers are addressed before they escalate. As noted by Alhomidan (2020), the failure to identify risks at the inception of a project often leads to significant cost overruns, which are exacerbated by unforeseen delays, material shortages, and operational disruptions. Abd El-Karim et al. (2017) further corroborated this by highlighting that early identification of risks, such as supply chain interruptions or policy changes, allows for proactive mitigation, resulting in better cost management throughout the project lifecycle. In large-scale infrastructure projects, Hwang et al. (2021) found that projects employing thorough risk identification procedures reduced cost overruns by as much as 25% compared to those with weaker risk identification frameworks. These findings support the view that effective risk identification plays a vital role in maintaining financial control in construction projects (Flyvbjerg, 2003; Edwards & Bowen, 2005; Mkombe & Mlozi, 2017).

Risk assessment further complements risk identification by enabling project managers to evaluate both the likelihood and potential impact of risks on project costs. Inaccurate assessments can lead to budget miscalculations and unexpected cost escalations. Agyekum-Mensah et al. (2020) emphasized that inadequate risk assessment results in inaccurate budgeting, causing project managers to underestimate or overestimate contingency reserves. Zeng et al. (2021) found that projects implementing advanced risk assessment methodologies, such as Monte Carlo simulations and sensitivity analyses, achieved better budget accuracy and reduced cost overruns by up to 20%. Similarly, research by Wuni and Shen (2020) highlighted the importance of continuous risk assessments throughout the

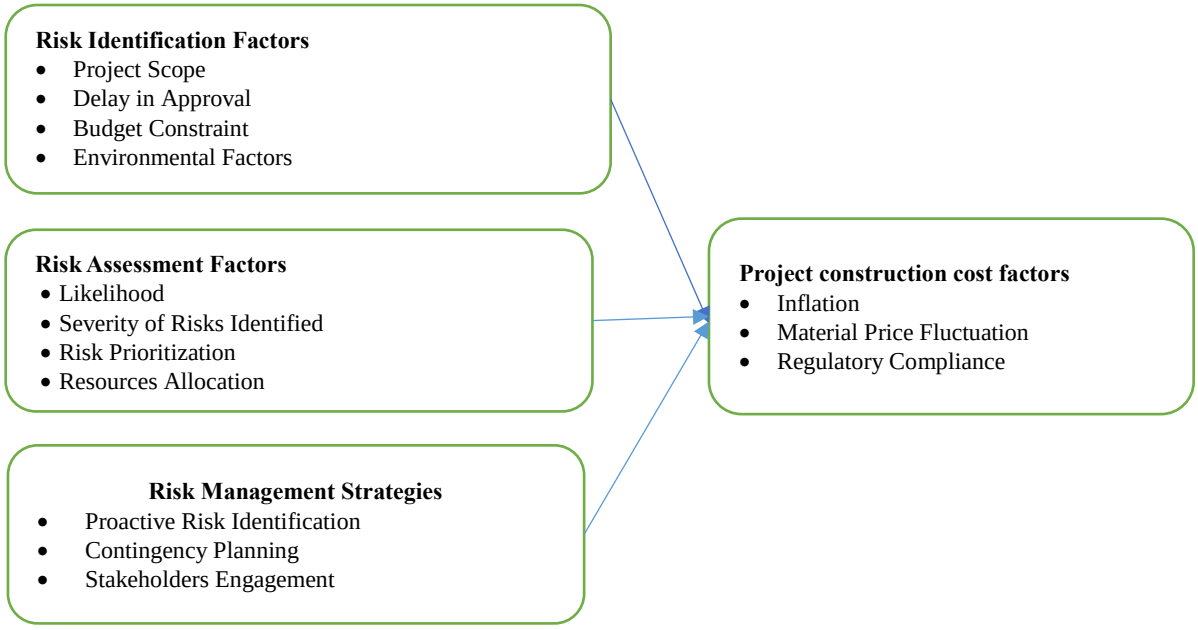
project lifecycle. They argued that risk assessments should not be static but must evolve as new risks emerge, which strengthens cost management efforts (Ferreira & Goh, 2021; Schlosberg, 2007). This iterative approach ensures that risk management strategies are adaptable and responsive to changing project conditions, mitigating unforeseen financial impacts.

The implementation of comprehensive risk management strategies has a profound effect on construction cost control. Studies show that when risk management frameworks integrate proactive risk-sharing mechanisms and collaborative stakeholder engagement, projects experience fewer cost overruns (Bromiley & Curley, 1992; Eriksson & Laan, 2007; Kitole et al., 2023). According to Goh and Abdul-Rahman (2021), adopting a proactive risk management approach that utilizes real-time data and technology improves risk monitoring and decision-making. Technologies such as Building Information Modeling (BIM) and Artificial Intelligence (AI) have transformed risk management processes, offering real-time insights that enhance cost control (Mbahu & Nkado, 2007; Kitole & Genda, 2024; Pinnock & Ochieng, 2013). Mahamid et al. (2020) found that BIM integration into risk management not only improved cost accuracy but also allowed for real-time adjustments to unforeseen challenges, resulting in a 15% reduction in budget overruns. These advancements enable faster risk response times, thereby improving the overall efficiency of construction project management (Choi et al., 2019; Chapman & Ward, 2011).

Despite these technological advancements, there are still critical gaps in applying risk management strategies in developing countries. For example, Kikwasi (2017) noted that while the Tanzanian construction industry recognizes the importance of risk management, its implementation remains inadequate due to limited technical capacity and financial resources. Similarly, Smith et al. (2014) argue that risk management in Tanzania's public construction sector needs to adopt more robust and comprehensive approaches to manage risks effectively. The integration of emerging technologies and risk-sharing frameworks, such as Public-Private Partnerships (PPP), could further reduce financial risks and improve project outcomes in Tanzania (Ngowi, 1997; Wang & Zhang, 2022).

Therefore, the empirical evidence underscores the critical role of effective risk management—encompassing risk identification, assessment, and mitigation—in controlling construction costs. The use of advanced risk assessment tools, proactive strategies, and innovative technologies like BIM and AI have proven to significantly reduce cost overruns and improve financial performance in construction projects. However, challenges remain in developing economies, such as Tanzania, where the implementation of risk management strategies is still evolving. Addressing these gaps requires better training, resource allocation, and the adoption of modern risk management practices to ensure more predictable and cost-effective project outcomes (Kahneman & Tversky, 1979; Akinsola et al., 1997; Rwelamila & Purushottam, 2014).

Figure 1: Conceptual Framework



3. Methodology

This study adopted a positivist research philosophy, aligning with the quantitative nature of the research by focusing on objective, observable facts and systematically testing hypotheses (Creswell, 2014; Saunders, Lewis, & Thornhill, 2019). The positivist approach was chosen to enable a structured and empirical investigation into risk management practices affecting construction costs in the Tanzanian judiciary's projects, as it emphasizes measurement, reliability, and generalization.

A cross-sectional research design was utilized, which is commonly recommended for studies that aim to provide a snapshot of a phenomenon at a single point in time (Bryman, 2016). This design was particularly suitable for capturing the current state of risk management practices across five judiciary construction projects, enabling the analysis of how these practices impact project costs in a real-time context. The cross-sectional approach allowed for the efficient gathering of data from a broad sample of stakeholders, ensuring that the findings reflect a representative view of the existing risk identification and cost management challenges within judiciary projects in Tanzania.

A quantitative research method was applied, using descriptive statistical techniques to summarize and interpret the data, revealing trends and patterns related to risk identification, mitigation strategies, and cost control (Blaxter, Hughes, & Tight, 2010). Random sampling was employed to ensure a representative selection of respondents, resulting in a sample of 119 participants from an estimated population of 170 judiciary administration employees in Dodoma City at the Judiciary Headquarters. The sample size was calculated using Yamane's (1967) formula, which ensured an adequate level of precision and confidence in the findings. Questionnaires served as the primary data collection tool, designed with structured questions to address the study's specific objective: *To assess risk identification factors in the Judiciary of Tanzania Construction Project Costs.* The structured format enabled the systematic collection of comparable quantitative data from respondents, which was subsequently

analyzed to identify key factors influencing risk identification and their impact on project cost management (Kothari, 2004). This methodological approach provided robust data for evaluating risk identification practices within judiciary construction projects, offering insights that could support improved cost control and project outcomes.

5. Results and Discussions of the findings

The paper assesses risk identification factors in the Judiciary of Tanzania Construction Cost Factors that were assessed include Project Scope Changes, Budget constraints, Approval Delays, Environmental Considerations and Stakeholders' Involvement. The respondent was asked to indicate their views by responding to questions on a five-point Likert scale with Strong Disagree = 1, Disagree = 2, Not Sure =3, Agree = 4, and Strong Agree = 5. The findings are presented in the succeeding sections.

Project Scope Changes

The findings from Table 1 reveal that the majority of respondents (83.2%) consider project scope changes as a significant factor in risk identification for construction costs within the Judiciary of Tanzania. This aligns with existing literature which highlights that project scope changes can lead to cost overruns and project delays due to unforeseen adjustments in the project's requirements (Akinsola et al., 1997; Kikwasi, 2017). Specifically, 36.1% of respondents strongly agree, and 47.1% agree that scope changes are a crucial risk factor, while only a small portion (6.7%) strongly disagree. The 10.1% of respondents who were unsure could suggest varying levels of experience or understanding of risk identification practices in the judiciary's construction projects. These results emphasize the need for comprehensive risk identification strategies that account for potential scope changes, as suggested by Wuni and Shen (2020), to mitigate cost escalation and project delays.

Table 1: Project Scope Changes

Project Scope Changes	Freq.	Per cent	Cum.
Disagree (2)	8	6.7	6.7
Not Sure (3)	12	10.1	16.8
Agree (4)	56	47.1	63.9
Strongly Agree (5)	43	36.1	100.00
Total	**119**	**100.00**	

Source: Field Study at the Judiciary of Tanzania, HQ (2024)

Budget Constraints

The findings from Table 2 show that the majority of respondents (89.9%) believe that budget constraints are a significant risk identification factor in the Judiciary of Tanzania's construction costs. This is consistent with existing research that underscores budget constraints as one of the primary risk factors leading to cost overruns and delays in construction projects (Flyvbjerg, 2003; Laryea, 2008). Specifically, 77.3% of the respondents agreed, and 12.6% strongly agreed that budget limitations pose a considerable risk. Only 10.1% of respondents were uncertain about the impact of budget constraints, which may indicate varying familiarity with the financial aspects of project management. These findings

align with previous studies emphasizing that effective budgeting and financial planning are essential for managing construction project risks and avoiding unforeseen cost escalations (Goh & Abdul-Rahman, 2021; Mato & Kaseva, 2019). Addressing budget constraints early in the project lifecycle can significantly improve cost management outcomes.

Table 2: Budget Constraints

Budget Constraints	Freq.	Per cent	Cum.
Not Sure (3)	12	10.1	10.1
Agree (4)	92	77.3	87.4
Strongly Agree (5)	15	12.6	100.00
Total	119	100.00	

Source: Field Study at the Judiciary of Tanzania, HQ (2024)

Approval Delays

The findings from Table 3 indicate that approval delays are widely considered a significant risk identification factor in the Judiciary of Tanzania's construction costs, with 66.4% of respondents either agreeing or strongly agreeing. Delays in project approvals have long been recognized as a critical risk in construction projects, contributing to prolonged timelines and increased costs due to the extended project lifecycle (Flyvbjerg, 2003; Akinsola et al., 1997). Of the respondents, 47.1% agreed and 19.3% strongly agreed on the importance of this factor, reflecting widespread concern over the bureaucratic processes that can hinder timely project execution. However, 23.5% of respondents were unsure, suggesting a lack of clarity or experience with how these delays directly impact project costs. Only 10.1% disagreed, likely reflecting specific experiences where approval delays may not have had as significant an impact. The results align with previous studies highlighting the need for streamlined approval processes to reduce delays and mitigate cost overruns in public-sector construction projects (Kikwasi, 2017; Enshassi & Mayer, 2005). Reducing approval delays could enhance project efficiency and reduce associated financial risks.

Table 3: Approval Delays

Approval Delays	Freq.	Per cent	Cum.
Disagree (2)	12	10.1	10.1
Not Sure (3)	28	23.5	33.6
Agree (4)	56	47.1	80.7
Strongly Agree (5)	23	19.3	100.00
Total	119	100.00	

Source: Field Study at the Judiciary of Tanzania, HQ (2024)

Environmental Consideration

The findings from Table 4 indicate that environmental considerations are regarded as a significant risk identification factor in the construction costs of the Judiciary of Tanzania, with 79.9% of respondents either agreeing or strongly agreeing. Environmental factors, such as compliance with environmental regulations, weather conditions, and the impact of construction on the surrounding ecosystems, have been consistently identified in the literature as crucial determinants of project costs (Bromiley & Curley, 1992; Goh & Abdul-Rahman, 2021). A large proportion of respondents, 42.9%, strongly agreed and 37% agreed, underscoring the importance of addressing environmental risks early in the project lifecycle

to avoid cost escalations and delays. Conversely, 16.8% were unsure, which may suggest a lack of direct involvement or understanding of the environmental aspects of project management. Only a small percentage (3.4%) disagreed, indicating minimal skepticism regarding the significance of environmental risks. This finding aligns with existing studies that emphasize the need for stringent environmental assessments and planning to mitigate risks and prevent cost overruns (Kikwasi, 2017; Mato & Kaseva, 2019). Environmental risks, if not adequately managed, can lead to regulatory fines, project stoppages, or increased costs for rework and mitigation efforts.

Table 4: Environmental Considerations

Environmental Considerations	Freq.	Per cent	Cum.
Disagree (2)	4	3.4	3.4
Not Sure (3)	20	16.8	20.2
Agree (4)	44	37.0	57.1
Strongly Agree (5)	51	42.9	100.00
Total	119	100.00	

Source: Field Study at the Judiciary of Tanzania, HQ (2024)

Stakeholders Involvement

The findings from Table 5 highlight that stakeholder involvement is perceived by 56.9% of respondents as a significant risk identification factor in the construction project costs of the Judiciary of Tanzania. Specifically, 40.3% agreed and 19.3% strongly agreed that stakeholder involvement plays a key role in risk identification. This is consistent with existing literature that emphasizes the importance of active stakeholder participation in identifying and mitigating risks in construction projects (Eriksson & Laan, 2007; Rwelamila & Purushottam, 2014). However, 23.5% of respondents were unsure, reflecting possible gaps in understanding the extent of stakeholder engagement in the judiciary's construction projects. Meanwhile, a notable 16.8% of respondents either disagreed or strongly disagreed, possibly indicating concerns about the effectiveness or necessity of involving stakeholders in the risk identification process. Previous studies suggest that insufficient stakeholder engagement can lead to misunderstandings, overlooked risks, and delays, ultimately affecting project costs and outcomes (Flyvbjerg, 2003; Goh & Abdul-Rahman, 2021). The mixed responses here suggest the need for better stakeholder communication and involvement mechanisms to ensure that all relevant risks are identified early in the project lifecycle, preventing cost overruns and improving overall project efficiency.

Table 5: Stakeholders Involvement

Stakeholders Involvement	Freq.	Per cent	Cum.
Strongly Disagree	4	3.4	3.4
Disagree	16	13.4	16.4
Not Sure	28	23.5	40.3
Agree	48	40.3	80.7
Strongly agree	23	19.3	100.00
Total	119	100.00	

Source: Field Study at the Judiciary of Tanzania, HQ (2024)

Descriptive Statistics on Risk Identification Factors in the Judiciary of Tanzania Construction Project Costs

The detailed results of descriptive statistics on the Risk identification factors in the Judiciary of Tanzania Construction Project Costs at the Judiciary of Tanzania HQ are presented in Table 6. The findings indicate that the Project Scope Changes have the mean value (M = 4.13, SD =0.849), Approval Delays (M = 3.76, SD = 0.883), Budget Constraint (M = 4.03, SD =0.478, Environmental Considerations (M = 4.19, SD = 0.836) and Stakeholders Involvement (M=3.59, SD=1.053). Although there is a big difference in the mean values of the examined factors, the findings suggest that environmental considerations are the most influential factor for risk identification in the Judiciary of Tanzania Construction Project Cost.

Table 6: Descriptive Statistics on Risk Identification Factors in the Judiciary of Tanzania Construction Project Costs

Variable	Obs	Mean	Std. Dev.	Min	Max
Project Scope Changes	119	4.13	.849	2	5
Approval Delays	119	3.76	.883	2	5
Budget Constraints	119	4.03	.478	3	5
Environmental Considerations	119	4.19	0.836	2	5
Stakeholders Involvement	119	3.59	1.053	1	5

Source: Field Study at the Judiciary of Tanzania, HQ (2024).

6. Conclusions

This study examined risk management practices in the context of construction project costs at the Judiciary of Tanzania, with a primary focus on identifying Risk Identification Factors. The findings shed light on how effective risk management can reduce cost overruns and improve the success of public construction projects. Key factors analyzed included Project Scope Changes, Approval Delays, Budget Constraints, Environmental Considerations, and Stakeholder Involvement, providing a comprehensive perspective on risk dynamics in the Judiciary's construction projects.

Environmental Considerations emerged as the most significant risk factor, emphasizing the influence of regulatory compliance, environmental impact assessments, and sustainability requirements on project costs. Project Scope Changes were also identified as a major contributor to cost overruns and delays, while Approval Delays and Budget Constraints further highlighted the challenges in managing financial and operational risks. Stakeholder Involvement demonstrated variability in its impact, underlining the need for consistent and inclusive engagement throughout project lifecycles to address diverse risk factors effectively. The study underscores the importance of integrating robust risk identification and management practices into construction project frameworks. Proactive measures, such as thorough risk assessments, rigorous scope management, and efficient approval protocols, can help mitigate risks and optimize project outcomes. Additionally, emphasizing environmental considerations early in project planning and fostering stakeholder collaboration can enhance decision-making and resilience to external pressures, thereby improving overall project success.

The insights from this study provide a valuable foundation for refining risk management strategies in public construction projects. By addressing the identified risk factors, policymakers, project managers, and stakeholders can improve cost control and project performance, ensuring that construction initiatives align with financial, operational, and sustainability goals. These findings contribute significantly to understanding and enhancing risk management practices in the Judiciary of Tanzania and offer actionable recommendations for similar institutions.

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