

## Investigating TANROADS' Performance in Tendering and Supervision of Road Projects: A Review

<sup>1</sup>Alfei Damasi\*, <sup>2</sup>Yazid Mwishwa, <sup>3</sup>Duwa Hamis Chengula

<sup>1</sup>Department of Construction Management and Technology, Mbeya University of Science and Technology, P.O Box 131, Mbeya, Tanzania

<sup>1,2,3</sup>Department of Civil Engineering, Mbeya University of Science and Technology, P.O Box 131, Mbeya, Tanzania

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### ABSTRACT

The Tanzania National Roads Agency (TANROADS), a semi-autonomous body under the Ministry of Works and Transport, is mandated to manage trunk and regional roads, airports, weighbridges, and road project supervision. However, persistent procurement and supervision deficiencies undermine project performance, evidenced by 2022/2023 CAG reports of TZS 66.06 billion in cost overruns, 60% time overruns, and 21% substandard completed roads. This systematic literature review of 68 sources from 2010 to 2025 employs thematic analysis to investigate how tendering and supervision weaknesses contribute to underperformance. Key findings reveal. Tendering failures: Inadequate feasibility studies (e.g., 85–97% cost overruns in projects), vague documentation, evaluation bias toward lowest bids, and contract award delays and selection of underqualified contractors. Supervision gaps: Understaffing (1 engineer per multiple sites), irregular inspections, poor documentation, and weak coordination compromise quality enforcement and accountability. Recommended reforms integrate digital, institutional, and policy enablers: Tendering: Mandatory AI-augmented feasibility studies, 70% technically weighted evaluations, NeST-automated bid validation, and contractor performance dashboards. Supervision: Drone-assisted monitoring, geo-tagged digital reporting via NeST, community oversight committees, and IoT-verified milestone payments. These interventions target systemic transformation of Tanzania's road infrastructure governance to uphold transparency, value for money, and public accountability.

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\*Corresponding author's e-mail address: [alfeikimario@gmail.com](mailto:alfeikimario@gmail.com) (Damas, A)

## 1.0 Introduction

The Tanzania National Roads Agency (TANROADS) is a semi-autonomous agency operating under the Ministry of Works and Transport, established to enhance the efficiency and accountability in managing the national road network. Created under the Executive Agencies Act No. 30 of 1997 through Government Notice No. 293 of 2000, TANROADS has since seen its mandate expanded through amendments in 2009 and 2020 (TANROADS, 2022). Its core responsibility is to oversee the day-to-day management of trunk and regional roads across mainland Tanzania. As of December 2021, TANROADS was managing a total of 36,361.95 kilometres of roads, including 12,215.58 kilometres of trunk roads and 24,146.37 kilometres of regional roads, with 11,186.16 kilometres paved.

The agency's responsibilities now encompass road planning, design, construction, maintenance, airport development, contract management, operation of weighbridges and toll roads, and establishment of a national road data bank (TANROADS, 2022).

In Tanzania, the tendering process is regulated under the Public Procurement Act No. 10 of 2023, which mandates the use of transparent and competitive bidding to ensure fairness, value for money, and accountability in public procurement (URT, 2023). Within the road sector, tendering plays a vital role in the acquisition of contractors for the construction, rehabilitation, and maintenance of national and regional road networks (PPRA, 2021). By fostering open competition, tendering reduces opportunities for corruption and misallocation of public funds, which have historically plagued the construction industry in many developing countries (World Bank, 2021a). Roads hold strategic significance, supporting economic growth, enhancing service delivery, and bolstering public trust in government institutions (AfDB, 2025).

Recently, Tanzania has undertaken significant reforms to modernise its public procurement system. A pivotal development is the Public Procurement Act No. 10 of 2023, which was enacted by Parliament on September 29, 2023, and came into effect on June 17, 2024 (PPRA, 2024a; URT, 2016).

Currently the procurement processes are done through the Tanzania National e-Procurement System (TANePS) to the National e-Procurement System of Tanzania (NeST) (Shatta, 2020). TANePS faced multiple challenges, including system inflexibility, user interface difficulties, and limited adaptability to local needs (Njwayo, 2023). The NeST replaces TANePS, effective operationally from July 1, 2023, and is now the mandatory platform for all public procurement activities (PPRA, 2024). NeST facilitates the full procurement lifecycle electronically, including supplier registration, bid advertisement, bid submission, evaluation, contract award, payment tracking, catalogue management, and e-auctions (PPRA, 2024b). Importantly, NeST is built to enhance transparency, reduce human interference, and improve operational efficiency (Funuguru, 2023) and comply with the Open Contracting Data Standard (OCDS), thereby enabling structured public access to procurement information, which fosters accountability and deters corrupt practices (The Citizen, 2023).

In the Tanzanian context, road transport remains the dominant mode of transportation, accounting for over 80% of the movement of people and goods (AfDB, 2025). Supervision of roads by the agency involves a series of structured activities—including site inspections, quality assurance, progress verification, contractor coordination, and documentation—designed to ensure compliance with contract specifications, engineering standards, and policy requirements (World Bank, 2023). Road projects experience higher time overruns than other projects; to enhance supervision, a streamlined, systematic process for risk identification and management is essential (Nguri et al., 2024).

In Tanzania, the supervision of trunk and regional road projects falls under the mandate of the Tanzania National Roads Agency (TANROADS), which operates under the Ministry of Works and Transport and is further guided by Roads Act No. 13 of 2007 (URT, 2007). This act includes standardised documents such as the Standard Specifications for Roadworks (2000) and technical manuals issued by the Ministry of Works and Transport. Supervision is implemented through regional TANROADS offices and typically involves resident engineers, materials engineers, inspectors, and sometimes external consultants,

especially for large and donor-funded projects (TANROADS, 2022). These consultants, procured competitively, offer design review, contract administration, and resident engineering services as part of project requirements set by development partners like the African Development Bank, World Bank, or JICA (AfDB, 2025; World Bank, 2023, 2021b).

The Controller and Auditor General (CAG) report for the financial year 2022/2023 recorded cost overruns amounting to TZS 66.06 billion across several road projects, primarily due to poor project planning, variations in scope, and delayed implementation (NAOT, 2024). This problem persists as the main challenge in many Saharan road projects (Yakubu et al., 2023). Moreover, time overruns have been a consistent trend. In his 2020 performance audit, the CAG noted that 60% of reviewed TANROADS projects were not completed within the planned schedule, significantly delaying service delivery and contributing to budget inflation (NAOT, 2021). This aligns with findings by Albert (2009), who reported that several TANROADS-implemented projects experienced average time overruns of over 35%, citing examples such as the Ushirombo–Biharamulo and Kabingo–Kasulu–Manyovu roads. Similarly, Israel (2023a) assessed road projects in the Songwe region and found that 35.4% of projects exceeded their budgets, 56.9% overran the timeline, and 6.6% did not meet acceptable construction quality standards. Quality concerns have also been raised in TANROADS' own reporting; for example, in its 2021/22 Annual Report, the agency acknowledged that over 21% of completed roads were categorised as either fair or poor, necessitating frequent repairs within the defect liability period (TANROADS, 2023). These roads still face persistent performance issues, cost overruns, time overruns, and substandard construction quality (Egina, 2021; Mlinga, 2016). PPRA and TANROADS have established several guidelines to enhance transparency and effective tendering, as well as to improve TANROADS's supervision of road projects. Despite the ongoing reforms aimed at improving tendering and supervision, challenges persist. This review critically examines the tendering and supervision processes to identify how weaknesses in these stages contribute to project underperformance.

The area which hasn't been accurately investigated (Israel, 2023b).

Furthermore, it assesses proposed interventions and recommendations from academic research, government audits, and institutional reports aimed at improving the efficiency, accountability, and quality of road project delivery in Tanzania.

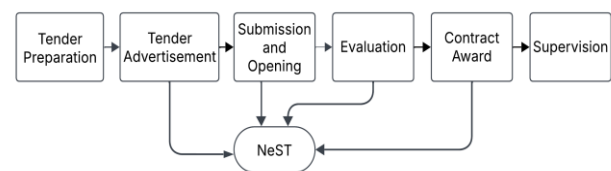
## 2.0 Literature review

### 2.1 The concept of Tendering and Supervision

The literature review is organised to critically evaluate the tendering and supervision processes for road construction projects under TANROADS. It begins by examining each stage of the tendering process, how it is conducted, its significance within the overall procurement cycle, and the specific challenges encountered. Finally, it presents recommended strategies and reforms aimed at improving supervision practices and enhancing the overall performance and accountability of road infrastructure projects in Tanzania.

Figure 1

*TANROADS Projects Procurement and Implementation Process*



### 2.2 Tendering

The tendering process is governed by the Public Procurement Act No. 10 of 2023. The first stage of the tendering process, which begins at inception, is procurement planning, specifically the preparation of annual procurement plans that align with approved budgets and strategic needs (PPRA, 2023). This part is followed by the preparation of tender documents, including specifications, eligibility and evaluation criteria, and contract conditions, typically using standard formats provided by the Public Procurement Regulatory Authority (PPRA, 2023). The invitation to tender is then published through platforms such as the Tanzania Procurement Journal and the National e-Procurement System (NeST) to ensure broad accessibility and participation (PPRA, 2023). A designated evaluation committee conducts the assessment in distinct stages—administrative,

technical, and financial—based strictly on the criteria stated in the tender documents. After evaluation, a notice of intention to award initiates a mandatory standstill period during which bidders may raise complaints (PPRA, 2015). These procedures are conducted digitally through NeST, enhancing auditability, reducing delays, and aligning the system with international best practices (PPRA, 2024b).

### *2.2.1 Preparation Stage*

It involves developing the project scope, conducting feasibility studies, setting realistic budgets, identifying potential risks, and preparing comprehensive tender documents. According to the World Bank (2021a), well-prepared procurement plans reduce implementation delays and cost overruns in infrastructure projects. In preparation, the agency conducts thorough feasibility studies and proper planning. Many road projects in Tanzania proceed without sufficient assessment of technical, environmental, and financial viability, which leads to poorly defined project scopes and unrealistic implementation timelines. For example, the Mwanza–Shinyanga–Tinde and Nzega–Isaka road projects experienced cost overruns of 85% and 97%, respectively, as well as significant time delays due to design changes and insufficient site investigations (Rwakarehe and Mfinanga, 2014). Similarly, the Kigoma–Uvinza Road Project was delayed by more than 12 months and incurred a 25% cost overrun due to scope and planning weaknesses (Ndossy, 2020).

Another significant issue is the presence of inaccurate specifications, missing contractual terms, and vague evaluation criteria, all of which contribute to bidder confusion, increased variation orders, and procurement disputes. The Public Procurement Regulatory Authority (2021) reported that over 30% of procuring entities in Tanzania faced difficulties drafting standard-compliant documents. A well-documented case is the Dar es Salaam Bus Rapid Transit (BRT) Project, where unclear technical details led to multiple contract amendments and unanticipated cost increases (PPRA, 2020). Poorly prepared documents compromise transparency and reduce the chances of attracting competent bidders. Limited involvement by key stakeholders during the preparation stage is another critical challenge.

The Arusha Outer Ring Road Project experienced substantial delays due to land acquisition issues that arose from inadequate community engagement during early planning (NAOT, 2021). The World Bank (2021b) also highlights that inclusive planning through stakeholder engagement leads to more socially sustainable infrastructure outcomes, especially in resettlement-prone areas.

Budget estimation errors frequently affect Tanzanian road projects. This leads to financial shortfalls and implementation delays when actual costs exceed budgeted amounts. The study (Khisa, 2015; Windapo et al., 2022) found that in the Songwe Region, several road projects experienced cost escalation because of flawed initial estimates. The PPRA (2023b) similarly reported that insufficient market data and a lack of experienced quantity surveyors contributed to cost underestimation in public projects.

A study by Kullaya et al. (2022) and Marco (2013) noted that contractual parties in Tanzanian road projects often lack clear roles and strategies for managing risk. This oversight results in unplanned costs and implementation bottlenecks. Failure to conduct early risk assessments means that many risks are discovered only after project commencement, when mitigation is more expensive and less effective.

Thorough feasibility studies should be mandatory before tendering to assess technical, financial, environmental, and social aspects of road projects (NAOT, 2022); failure to conduct them has led to scope changes and delayed execution in multiple road projects. It is recommended that feasibility reports be independently reviewed and validated to improve planning accuracy (NAOT, 2022). A significant number of procuring entities struggle to prepare complete tender documents; the MAPS II assessment targeted training for procurement staff to improve their ability to prepare legally compliant and technically sound documents (PPRA, 2023). Several road projects in Songwe and elsewhere have experienced cost overruns due to inaccurate estimates at the planning stage (Israel, 2023a). The NAOT (2022) also calls for more reliable budgeting grounded in recent market data and actual field conditions. Delays in land acquisition and scope disputes have often resulted from poor consultation with key stakeholders, especially local communities. The

NAOT (2022) recommends that project teams implement structured stakeholder engagement frameworks that involve affected communities and technical advisors from the outset. Rarely does the preparation stage include risk planning, leading to unexpected challenges during execution. Studies have shown that contracts often lack defined risk allocation, leading to disputes and claims (Moseti et al., 2021). It is therefore essential to develop and maintain a project-specific risk register during the planning phase.

### *2.2.2 Tender Advertisement*

The advertising stage in public procurement is essential for ensuring transparency, promoting fair competition, and enabling equal access to procurement opportunities. In the context of road projects managed by the Tanzania National Roads Agency (TANROADS), effective advertisement plays a critical role in attracting qualified and competitive bidders, which ultimately impacts the quality, cost-efficiency, and timely delivery of infrastructure projects. As required by the Public Procurement Act No. 10 of 2023, procuring entities must publish tender notices using approved platforms such as the National e-Procurement System (NeST) and the PPRA website to promote openness and access (URT, 2023). This regulatory obligation aims to prevent favouritism and ensure awareness of bid opportunities for all eligible contractors.

One of the most prominent issues affecting tender evaluation is the failure to adhere strictly to the pre-defined criteria set out in the tender documents. Evaluation committees are required to assess bids based solely on technical, financial, and legal requirements as outlined in the solicitation documents. However, the NAOT (2022) reported that in several TANROADS projects, contracts were awarded to bidders who failed to meet critical technical qualifications, such as years of experience, equipment ownership, or staff qualifications.

Another significant challenge is the lack of adequate technical expertise and skilled personnel within evaluation committees. According to TANROADS (2000), some regional offices lack evaluators with the necessary engineering or procurement background to properly assess complex road construction bids. In

such cases, committees may rely on staff with general administrative experience rather than technical competence, resulting in errors in evaluation, misinterpretation of specifications, or biased scoring. This issue is particularly critical when evaluating large-scale or donor-funded projects, where advanced knowledge is required to interpret technical proposals and compliance documentation.

TANROADS should strictly adhere to the legally mandated minimum advertisement periods as outlined in the Public Procurement Regulations, 2013. For national competitive tendering, the regulation requires a minimum of 21 calendar days, while international competitive tenders must be advertised for at least 30 days (URT, 2013). In cases involving large and complex works, advertising periods of up to 90 days are required. TANROADS should assess project complexity and, where feasible, exceed these minimum durations to allow bidders adequate time to prepare responsive and competitive proposals. Secondly, to enhance reach and visibility, TANROADS must ensure that all tender advertisements are published through the appropriate official channels, including the National e-Procurement System of Tanzania (NeST), the PPRA website, and widely circulated national newspapers, as prescribed by the procurement regulations (URT, 2023). Doing so will ensure that all eligible contractors, including those in remote areas, have equal access to tender information.

### *2.2.3 Tender Submission and Opening Stage*

In NeST, all submissions are now processed electronically, reducing the risk of manipulation and improving auditability. The Public Procurement Act No. 10 of 2023 mandates procuring entities to use NeST (URT, 2023). While Tanzania uses NeST for digital submissions, inconsistent documentation and limited public access to evaluation records persist. Kenya's IFMIS system enables real-time bid tracking via public dashboards (e.g., tenders.go.ke), allowing audits and civic scrutiny (Kepher, 2024).

Technical difficulties experienced on the NeST platform, particularly during peak submission periods (PPRA, 2023): bidders have occasionally been unable to upload documents or complete submissions on time due to system overload,

inadequate internet access, or limited ICT skills, especially in regional areas.

A common issue in the submission stage is the lack of real-time assistance for bidders experiencing technical challenges on NeST, especially close to deadlines. Recent findings (Mzuguno and Makula, 2025) suggest that TANROADS and other purchasing organisations should set up a helpdesk at NeST or a special hotline to assist bidders with last-minute technical problems and avoid unnecessary disqualifications.

Bidder disqualifications due to technical errors, missed uploads, or noncompliant formatting remain frequent. TANROADS should regularly organise bidder sensitisation sessions, especially before large-scale road projects, to clarify submission procedures on NeST. The MAPS II report (PPRA, 2023) found that improved bidder understanding of system functionality contributes to more compliant and competitive bids.

#### *2.2.4 Tender Evaluation*

Tender evaluation is a critical component of the public procurement process, aimed at identifying the most responsive and cost-effective bidder for a given project. This process is governed by the Public Procurement Act No. 7 of 2011 (as amended in 2016) and its accompanying Regulations of 2013. The evaluation process typically encompasses several stages: preliminary examination, detailed technical assessment, financial evaluation, and post-qualification verification. Evaluation committees, composed of professionals with relevant expertise, are appointed to ensure that all bidders are assessed against predetermined criteria outlined in the tender documents. The outcomes of these evaluations are meticulously documented and submitted to the Tender Board for approval (PPRA, 2020).

According to PPRA (2020), a well-executed evaluation process safeguards public resources and minimises the likelihood of project abandonment. Effective tender evaluation also fosters public trust by promoting transparency and fairness in contractor selection. This aspect is particularly crucial for TANROADS, which manages significant infrastructure projects funded by both the government and international donors. Adherence to stringent evaluation procedures enhances credibility and ensures

compliance with both national and international procurement standards (PPRA, 2020). Thirdly, the evaluation process ensures compliance with donor requirements and international best practices. Institutions like the World Bank and the African Development Bank co-finance many road projects, enforcing strict adherence to procurement procedures. Non-compliance can result in funding delays or withdrawal, adversely affecting project execution.

The Controller and Auditor General (CAG) reported instances where evaluation committees deviated from the set criteria. For example, in the 2021/2022 audit, it was found that certain contracts were awarded to bidders who did not meet the required technical qualifications, leading to questions about the integrity of the evaluation process (NAOT, 2022).

This deficiency in the evaluation process can lead to inaccurate assessments and suboptimal contractor selection (TANROADS, 2023). Kenya centralises training through the Public Procurement Oversight Authority (PPOA), which maintains certified evaluator rosters (Gachoka, 2016). Tanzania has no formal system to track contractor performance post-award, resulting in the repeated selection of underperformers. Kenya blacklists noncompliant firms and shares performance data across agencies (Mushori, 2020).

Proper recordkeeping is vital for ensuring accountability and enabling post-evaluation audits. However, the NAOT (2022) found that in many TANROADS regions, evaluation reports were either incomplete or entirely missing supporting documents. Key items such as bid opening records, detailed evaluation matrices, and justifications for scores awarded were not available. This lack of documentation limits transparency and creates difficulties when addressing disputes or appeals from unsuccessful bidders. Kenya has contractor performance dashboards for post-evaluation accountability and mandatory technical-capacity weighting (60–70%) (Ngugi and Ndeto, 2024; Nyaboe et al., 2025; Rotich et al., 2016; Suleiman and Wamalwa, 2024) against financial (30–40%) of PPRA.

Delays in completing the evaluation process have been a recurring challenge, especially for complex or high-value contracts. This is particularly problematic in road maintenance projects where

timing is critical due to seasonal weather patterns. While cost-efficiency is important, the lowest bid does not always represent the best value for money, especially in complex infrastructure projects. Studies by Mhando et al. (2018) show that contractors selected solely based on price often lack the capacity to deliver, leading to poor workmanship, requests for contract variations, or outright project abandonment. This undermines the intended value-for-money principle of public procurement.

In the absence of formal post-contract evaluation tools or performance tracking systems, it becomes challenging to assess whether the contractors fulfilled the technical, financial, and time-related obligations as expected. Without such feedback mechanisms, TANROADS is unable to determine whether the tender evaluation process effectively identified the most competent bidder. The lack of post-evaluation reviews also constrains institutional memory and hinders efforts to strengthen procurement reforms, as highlighted by the National Audit Office (NAOT, 2022) and by procurement scholars such as Josephina (2019). To address the limited technical capacity of evaluation committees, TANROADS should establish a structured capacity-building programme targeting procurement officers, engineers, and financial analysts involved in the evaluation process. This should include regular training and certification programmes conducted in collaboration with the Procurement and Supplies Professionals and Technicians Board (PSPTB) and the PPRA. A national database of qualified evaluators should also be developed and maintained to enable regional offices to access specialised expertise when needed. Furthermore, rotating evaluation members between regional and headquarters-level assignments would help disseminate knowledge and reduce overdependence on underqualified staff (TANROADS, 2022).

Mitigating political and institutional interference during the evaluation process is also crucial. TANROADS should adopt independent evaluation panels for high-value or donor-funded projects. These panels could include experts from academia, civil society organisations, or development partners, providing an impartial layer of oversight, as suggested by Israel (2023) and Josephina (2019). Evaluation committee

members must be required to declare any conflict of interest, and those with links to bidding firms should be excluded from participation. Enforcing sanctions against individuals found guilty of score manipulation or bias would further deter unethical practices.

#### *2.2.5 Contract Award and Signing*

The contract award and signing stage marks the final and formal phase of the procurement cycle. A formal notification of award is followed by contract signing, where both parties agree to the terms and conditions of the contract. According to the Public Procurement Regulations (2013), award notices must be issued in writing, unsuccessful bidders must be notified, and contracts must only be signed after performance securities and other legal conditions are fulfilled (URT, 2013).

A timely and transparent contract award and signature process facilitates early mobilisation, timely project commencement, and effective monitoring of contractual obligations. It also minimises disputes and safeguards public interests by ensuring that all legal conditions, including performance guarantees, are in place prior to implementation (PPRA, 2021).

However, TANROADS faces several challenges at this stage. A key issue is the delay in issuing award letters and signing contracts beyond the legally prescribed timeframe. The Controller and Auditor General (CAG) observed in the 2021/2022 audit that certain TANROADS projects experienced significant delays between contract award approval and the actual signing of contracts. In one notable case, a road project in the Arusha Region experienced a delay of over 45 days in contract signing, leading to late mobilisation and missing project milestones (NAOT, 2022). Such delays are often caused by administrative inefficiencies, slow internal approvals, and delays in obtaining required securities from contractors. Another recurring problem is non-compliance with proper award procedures. In some projects, award letters were issued before obtaining necessary approvals from relevant authorities, and in other cases, unsuccessful bidders were not properly notified, violating the principles of transparency and fairness (PPRA, 2021).

The NAOT (2022) highlighted that in some road maintenance projects, contracts were executed despite missing key supporting documents such as performance guarantees and tax clearance

certificates, which later affected performance management and dispute resolution.

Another challenge concerns contractor readiness after award notification. In certain cases, contractors delay the submission of required documents or fail to mobilise the site on time, often due to financial or logistical constraints. This suggests that evaluations may not always adequately assess the contractor's practical readiness for implementation. According to Egina (2021), such post-award inefficiencies are commonly linked to weak bidder vetting during the evaluation stage and poor contract management planning.

To address these issues, several reforms are proposed. First, TANROADS should implement a monitoring system to track the time taken between award approval and contract signing. Internal deadlines should be enforced to ensure that contract signing occurs within a legally acceptable timeframe. Second, pre-contract verification procedures should be strengthened to ensure that all legal and financial requirements are fully met before issuing award letters. This includes verification of performance bonds, tax clearance certificates, and insurance policies. Third, TANROADS should improve the evaluation of contractor readiness during the bid assessment stage, including scores for financial capacity and past mobilisation performances.

### *2.3 Supervision*

Project supervision and implementation constitute a critical phase in the procurement and execution of road infrastructure projects (de Araújo et al., 2017; Sayyed et al., 2023). The implementation phase begins after contract signing and includes contractor mobilisation, physical construction, routine inspections, and completion (Saleh and Hilal, 2024). It requires close supervision to ensure the works meet expected standards and timelines (TANROADS, 2000).

According to the Public Procurement Regulatory Authority (PPRA, 2021), effective supervision is essential to achieving value for money and preventing implementation failures. Research has linked inadequate supervision to quality issues, cost overruns, and premature infrastructure failure (Israel, 2023b; Kullaya et al., 2022).

According to Killo and Rwela (2024) and Simon (2017), in several projects, limited on-site and inefficient supervision of engineers resulted in poor contractor performance and delayed works. Amoah et al. (2021) also concluded that

inadequate staffing and underqualified field engineers significantly contributed to delays in the completion of road construction projects in Tanzania.

Another major issue is the irregularity of site visits, particularly in remote or geographically challenging areas. These inconsistencies lead to missed quality checks and late detection of deviations from design. According to TANROADS (2023), delays in routine inspections are often due to logistical constraints such as lack of transportation, insufficient fuel allocation, or unavailability of senior technical staff. Ngowi (2022) noted that irregular site inspections and reactive supervision practices in Tanzanian public projects result in uncoordinated progress and weakened quality control.

Accurate and up-to-date records such as site diaries, inspection reports, and photographic evidence are essential for tracking project progress, resolving disputes, and ensuring transparency. According to Israel (2023), poor recordkeeping in road projects not only limits the ability of stakeholders to monitor progress but also impedes timely decision-making and communication between contractors, supervisors, and clients.

Lack of transparency within the supervision process further undermines project integrity. Transparency International (2024) has documented corruption as a systemic problem in public infrastructure delivery in Tanzania, where bribes may be exchanged to overlook non-compliance with project specifications. Allegations of such practices have emerged in projects like the Kigoma-Kasulu Road, where premature failure was linked to the use of substandard materials and weak enforcement by supervisors.

Coordination challenges between TANROADS officials, contractors, and supervision consultants contribute to inefficiencies during project implementation. Abdallah et al. (2025) observed that lack of coordination and poor communication are recurring problems in public infrastructure projects, often leading to misunderstandings, delayed responses, and poor performance.

We need a combination of institutional, technical, and policy interventions to address these challenges. First, recruit additional qualified supervision personnel, especially in regions with multiple projects, and provide ongoing training to improve staff capacity. Amoah et al. (2021) recommend strengthening human resources in



road authorities to improve on-site supervision and reduce project delays. Second, the use of digital systems to schedule and monitor site inspections can ensure timely supervision and flag any missed visits. TANROADS (2023) suggests that digitising supervision schedules and reports could improve consistency and efficiency in inspection routines.

Thirdly, the agency must enforce standardised documentation protocols. Supervisors should be required to complete inspection checklists, take geotagged site photos, and maintain dated progress reports, all of which are stored in centralised systems. Israel (2023) emphasises that well-maintained documentation supports better coordination, faster decision-making, and improved audit compliance. Fourth, regular site meetings between TANROADS, contractors, and consultants should be institutionalised. According to Josephina (2019) and Kimaro (2018), structured coordination and feedback mechanisms enhance project execution by aligning all parties on expectations and responsibilities.

Furthermore, to reduce the risk of corruption and improve accountability, TANROADS should establish stronger oversight and enforcement mechanisms. Transparency International (2024) suggests setting up independent monitoring bodies and implementing whistleblower protection policies to encourage the reporting of unethical practices. Smith and Johnson (2021) recommend integrating public accountability tools and audits into supervision processes to detect and deter corrupt behaviour.

Finally, TANROADS should introduce performance evaluation systems for both supervision consultants and contractors. These evaluations should assess technical competence, responsiveness, communication, and adherence to timelines. PPRA (2021) advocates for performance-based contracting and feedback systems as tools for enhancing accountability and improving contractor selection in future tenders. These reforms would ensure continuous improvement in procurement practices and supervision standards.

#### *2.4 Theoretical Framework*

The study analysed theoretical concepts relevant to the research questions concerning road project performance in Tanzania, specifically focussing on the tendering and supervisory processes overseen by TANROADS. The persistent issues of project cost overruns, time overruns, and substandard

construction quality, frequently linked to inadequate supervision, are central concerns.

Evidence from research indicates that the success of road projects fundamentally depends on effective and transparent procurement (tendering) and robust supervision mechanisms. We found that theories related to procurement efficiency, project management, quality control, and accountability were relevant to our study.

Shalimova and Kuzmenko (2020), in a World Bank report, demonstrate that effective, transparent tendering is fundamental to mitigating the pervasive cost and time overruns, as well as corruption risks. The integration of formal quality management systems matching the complexity of the construction within supervision (Fu et al., 2023), supported by Akinnusi and Nel (2020) in the ISO report of the quality management system, offers a proven approach to elevate construction quality above the substandard levels frequently reported. Finally, the importance of accountability mechanisms and strong contract management, underpinned by OECD (2017) principles and evidenced in practice by Sousa and Almeida, highlights how systems like Tanzania's NeST platform can reduce irregularities and ensure project integrity, fostering successful execution.

### **3.0 Materials and Methods**

#### *3.1 Review Approach*

This study employed a systematic literature review (SLR) approach. According to the conceptual framework, the aim was to critically examine procedural weaknesses and identify challenges such as cost overruns, time delays, and compromised construction quality. To achieve this, the study drew from a diverse range of sources, including academic studies, policy documents, audit reports, legislative texts, and publications from relevant institutions.

The review focused on literature published between 2010 and 2025, with a primary focus on Tanzania's road infrastructure sector and comparative insights from Sub-Saharan African countries. The sources consulted included peer-reviewed journal articles accessed through academic databases such as Google Scholar, Scopus, and ResearchGate. Grey literature was also reviewed, notably performance and audit reports from the Controller and Auditor General (CAG), documents from the Public Procurement Regulatory Authority (PPRA), and annual reports and technical manuals from TANROADS. Additional sources included public procurement regulations and acts, reports from international organisations such as the World Bank and African

Development Bank (AfDB), and credible news sources like The Citizen (2023), which provided information on recent procurement reforms, including the transition from TANEPS to NeST.

### 3.2 Stages of Review

To ensure rigour and relevance, the review focused on the study's questions related to the road construction sector in Tanzania, specifically examining publications from 2010–2025. Priority was given to documents offering empirical findings, audit insights, policy analysis, or implementation reviews. Both peer-reviewed academic literature and grey literature (e.g., government reports, legislation, and institutional publications) were included.

The literature search was conducted using structured keyword strategies and Boolean operators such as “tendering process” AND “Tanzania” AND “road projects”, “supervision challenges” AND “TANROADS”, and “CAG report AND road construction”. These searches were applied across several databases and institutional repositories, including those of the PPRA, TANROADS, NAO, World Bank, and AfDB. Documents were initially screened by titles and abstracts; relevant full texts were then reviewed for content quality. A total of 68 documents met the criteria and were included for in-depth review. The second phase of the search focuses on themes that detail key challenges and proposed reforms. The findings were analysed through a narrative synthesis approach, allowing for thematic categorisation, trend identification, and a comparison of proposed solutions across different sources, as shown in Figure 2. This enabled a coherent mapping of observed challenges to institutional and policy-level recommendations aimed at improving procurement and supervision effectiveness in Tanzania's road construction sector.

## 4.0 Results and Discussion

### 4.1.1 Overview of Key Findings

This study conducted a systematic review of scholarly publications, government audit reports, and regulatory documents to examine the tendering and supervision processes of road construction projects managed by the Tanzania National Roads Agency (TANROADS). The review revealed persistent challenges across both procurement and implementation stages. In the tendering process, common issues include inadequate planning and feasibility analysis, inconsistent adherence to evaluation criteria, and delays in contract award and signing. These

procedural shortcomings often lead to cost overruns, schedule delays, and disputes. On the supervision side, the study identified inadequate staffing, irregular site inspections, poor documentation practices, and weak coordination between key stakeholders. These supervision gaps directly compromise the quality, accountability, and sustainability of road infrastructure projects. Despite several reform efforts, including the enactment of the Public Procurement Act No. 10 of 2023 and the introduction of the National e-Procurement System (NeST), institutional and operational inefficiencies remain widespread.

### 4.1.2 Tendering-Related Challenges and Implications

The review found that inadequate preparation during the early stages of tendering significantly undermines the success of road construction projects. Many projects lack rigorous feasibility studies or detailed engineering designs prior to procurement. For instance, the Mwanza–Shinyanga–Tinde and Nzega–Isaka road projects suffered from cost overruns of 85% and 97%, respectively, largely due to design changes resulting from poor site assessments (Rwakarehe and Mfinanga, 2014). In addition, the Controller and Auditor General (NAOT 2022) reported that several TANROADS projects were launched with incomplete or unclear tender documents, leading to increased variation orders and extended implementation timelines.

In multiple instances, contracts were awarded to bidders who failed to meet technical qualifications outlined in the solicitation documents (NAOT, 2022). This indicates weak enforcement of procurement laws and creates opportunities for project underperformance. Moreover, some evaluation committees rely heavily on the lowest price criterion without adequately assessing technical merit. Kullaya et al. (2022) found that such practices result in the selection of ill-equipped contractors, leading to quality defects, project delays, and contractual disputes. These outcomes contradict the principle of value for money, which is central to public procurement.

The CAG (2022) audit revealed that some projects experienced delays of up to 45 days between contract award approval and signing due to bureaucratic inefficiencies and missing documentation. These delays postpone project start dates and often lead to increased costs, especially in regions affected by seasonal weather patterns.

To address these issues, it is critical that TANROADS institutionalise comprehensive

feasibility studies as a prerequisite for procurement. These should include technical, environmental, social, and financial assessments. The Public Procurement Regulatory Authority (2023b) also recommends forming independent review panels to validate planning documents prior to advertisement. Evaluation committee members must undergo regular capacity-building programmes on procurement regulations and technical evaluation methods. Establishing a national registry of certified evaluators under PSPTB would enable regional offices to rely on specialised expertise. Furthermore, TANROADS should adopt project-specific evaluation models that balance price with technical capacity and past performance. Internal controls must ensure that contract signing occurs promptly after approval, with all supporting documents verified and archived in NeST for traceability and audit readiness.

#### 4.1.3 Supervision-Related Challenges and Implications

Supervision is the result-orientated phase, with problem-solving skills, alternative measures, and execution of the project objectives (IPMA, 2015). In TANROADS, project supervision faces severe limitations in capacity due to the understaffing of the regional offices (NAOT, 2022). This results in infrequent site visits, late identification of defects, and weak enforcement of quality standards. Afzal and Tumpa (2024) confirmed that inadequate staffing and limited field expertise are major contributors to project delays and underperformance.

Logistical constraints further hinder smooth supervision efforts. Such constraints make regular inspections difficult, particularly in remote or terrain-challenging regions. The study by Afzal and Tumpa (2024) acknowledged that irregular supervision compromises quality assurance and increases the risk of contractor non-compliance. According to the CAG (2022), documentation gaps affect payment approvals, dispute resolution, and audit compliance. Israel (2023b) highlighted that poor recordkeeping impairs decision-making and slows issue resolution. Moreover, coordination among project stakeholders, TANROADS, contractors, and supervision consultants is frequently fragmented. Strategic deployment of mobile inspection units and region-specific supervision task forces can help cover large project portfolios more effectively. All engineers and inspectors should be trained in the use of standardised checklists, georeferenced photographic reporting, and digital recordkeeping systems integrated into NeST.

Israel (2023a) recommends that a uniform digital supervision reporting template be developed to enhance consistency, auditability, and accessibility. In addition, biweekly site meetings should be mandated for all active projects to enhance coordination and prompt resolution of emerging issues.

Ultimately, ethical considerations in supervision regarding scope, time, and cost contribute to producing the best outcomes and ensuring sustainability, which is a crucial element of project management encompassing principles, processes, and competencies (de la Cruz López et al., 2021). TANROADS should adopt performance-based evaluation systems for both contractors and supervision consultants. These systems should assess timeliness, quality, responsiveness, and technical compliance, with results informing future procurement and performance audits (PPRA, 2021).

Figure 2 below indicates the key factors in the tendering process and its interrelationships with supervision.

Figure 2

*Tendering and Supervision Flow Chart Source: Author (2025)*

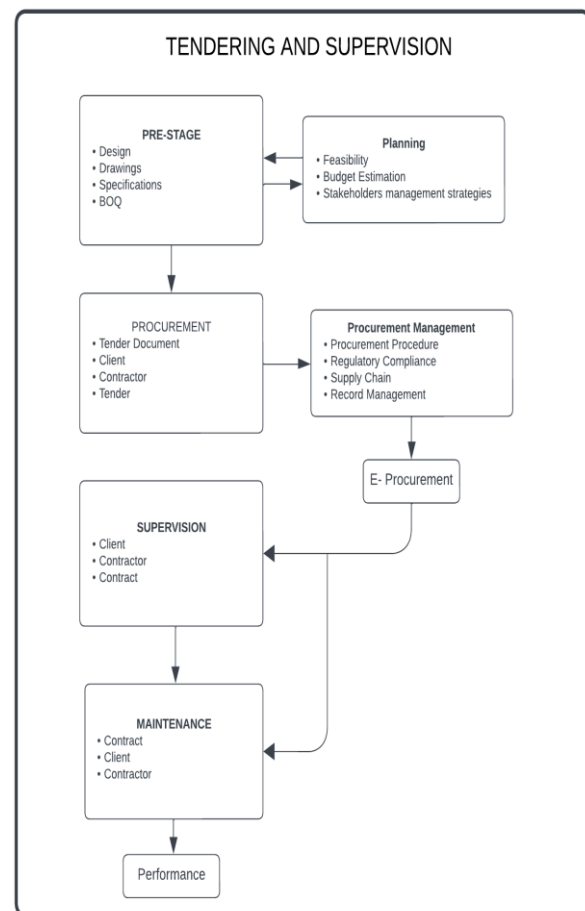


Table 1

*Showing Tendering and Supervision, Associated Challenges, Recommendations, and Supporting Literature*

Stage	Challenges	Recommendations	Authors & Year
Preparation	Lack of feasibility studies, incomplete designs, vague tender documents, limited stakeholder engagement, poor risk planning.	Mandate AI-augmented feasibility studies (GIS/remote sensing); Adopt ISO 9001-aligned templates; Conduct participatory stakeholder forums; Embed risk registers in NeST.	NAOT (2022); World Bank (2021a); Khisa (2015); Windapo <i>et al.</i> (2022); Kullaya <i>et al.</i> (2022)
Tender Advertisement	Limited visibility and reach of advertisements; insufficient advertising period.	Ensure timely and widespread tender publication through NeST, PPRA, and national newspapers. Extend ads to 90 days for complex projects; SMS alerts to local contractors.	URT (2023); PPRA (2021)
Submission & Opening	System difficulties on NeST, lack of technical assistance for bidders, disqualification due to submission errors	Deploy AI helpdesk. Implement pre-submission validation tools. Conduct mandatory virtual bidder workshops.	PPRA (2023); Shatta (2020)
Evaluation	Non-compliance with evaluation criteria, lack of technical expertise, delays, over-reliance on lowest bid, no post-evaluation review.	Use standardised evaluation templates. Legislate technical weighting (min. 70%) to prioritise capability over cost. Train evaluators, rotate staff, apply penalties, and implement a post-contract evaluation system. Launch contractor performance dashboards in NeST.	NAOT (2022); PPRA (2021); Josephina (2019); Israel (2023)
Contract Award & Signing	Delayed signing, missing legal documents, non-notification of bidders, contractor unpreparedness.	Assess contractor readiness during evaluation. Enforce 15-day signing. Automate document verification via NeST. Request mobilisation bonds and equipment photos and certificates.	NAOT (2022); URT (2013); Egina (2021); Mlinga (2016)
Supervision	Inadequate staffing, irregular site visits, logistical challenges, poor documentation, weak coordination, no performance evaluations.	Recruit and train engineers, digitise inspection plans, enforce documentation standards, hold regular site meetings, and evaluate supervisory performance. Mandate geotagged daily reports in NeST. Form community oversight committees; Link payments to IoT sensor verified milestones.	NAOT (2022); Amoah <i>et al.</i> (2021); Israel (2023); Ngowi (2022); PPRA (2021); Kimaro (2018)

## 5.0 Conclusion and Recommendations

This study systematically examines the tendering process and its interrelationships with supervision during the implementation of road construction projects managed by the Tanzania National Roads Agency (TANROADS).

To mitigate outlined challenges, the study recommends a multi-faceted reform strategy anchored in three systemic enablers for sustainable change. The study recommends instituting mandatory feasibility studies and stakeholder consultations at the planning stage, supported by digital risk assessment tools such as

AI-integrated NeST modules, to prevent design flaws.

We recommend professionalising evaluation committees through targeted training, certification, and a national evaluator registry, ensuring expertise aligns with project complexity. We recommend enforcing documentation standards within NeST through automated compliance checks and public dashboards, thereby enhancing real-time transparency.

Performance-based supervision and contracting systems, supported by Internet of Things (IoT) real data monitoring and blockchain-enabled payments, establish a connection between milestones and quality. These reforms, reinforced

by optimised e-governance (NeST), capacity-building partnerships (e.g., the TANROADS Academy), and strict legal enforcement (e.g., ineligibility protocols under PPA 2023), are essential to transforming Tanzania's procurement ecosystem. They will ensure effective road infrastructure delivery and institutionalised transparency, value for money, and public accountability.

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## 8.0 Declaration of Conflicting Interests:

The authors declare no conflict of interest.

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