

Effects of Transparency on Infrastructural Development in Hargeisa, Somaliland

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Abstract: The study examined the effects of transparency on infrastructural development in Hargeisa, Somaliland. Employing a descriptive and correlational research design, data were collected from 146 stakeholders, including government officials, project managers, contractors, and community members. Quantitative data were analysed using descriptive statistics and regression analysis, while qualitative insights from interviews provided contextual depth. Results reveal a strong positive relationship between transparency and infrastructural development, with transparency explaining 36.9% of the variance in development outcomes. Findings indicate that transparency enhances budgetary awareness, reduces corruption, and promotes adherence to quality standards in infrastructure development projects. Based on these findings, the study recommends strengthening transparency mechanisms, institutionalising openness through policy, promoting public participation, leveraging technology, and reinforcing anti-corruption frameworks. These measures are essential for improving infrastructure quality and fostering sustainable infrastructural development in Hargeisa.

Keywords: Transparency, Infrastructural Development, Governance, Corruption Reduction, Public Participation, Hargeisa, Somaliland.

1. Introduction

Infrastructure development plays a central role in promoting economic activity, social well-being, and effective urban service delivery. Facilities such as roads, water supply systems, drainage networks, and public buildings support mobility, productivity, and access to essential services. In developing and post-conflict contexts, infrastructure development also contributes to institutional strengthening and public trust by demonstrating the capacity of governing authorities to meet societal needs (World Bank, 2020).

Transparency in development governance refers to the extent to which information on policies, decisions, and project implementation is openly shared with stakeholders. In the context of infrastructure development, transparency includes clear communication of project objectives, disclosure of financial allocations, openness in contractor selection, and regular reporting on implementation progress. When such information is accessible, it strengthens monitoring mechanisms and discourages inefficiencies and unethical practices. Research indicates that transparency improves infrastructure outcomes by enhancing institutional discipline and enabling informed stakeholder participation (Islam, 2020; Bauhr & Grimes, 2021).

Hargeisa has undergone significant urban expansion driven by population growth and economic activity, placing increased pressure on existing infrastructure systems. Authorities and development partners have undertaken infrastructure initiatives to address transport, water, and public service needs. Nevertheless, the performance of many projects has been constrained by limited information flow to the public, weak disclosure of procurement decisions, and insufficient communication on project implementation. These conditions have contributed to public dissatisfaction and reduced confidence in infrastructure programs, suggesting that inadequate transparency remains a key challenge affecting infrastructural development in the city (UNDP, 2022; World Bank, 2023).

Although transparency is widely promoted as a mechanism for improving governance and development performance, there is limited empirical evidence examining its influence on infrastructural development in Hargeisa. Existing studies on transparency largely focus on national governance or public financial management, with little attention given to city-level infrastructure outcomes in emerging governance systems such as Somaliland. Moreover, available local studies tend to be descriptive and lack empirical analysis linking transparency to infrastructure performance.

This study seeks to address this gap by examining the effects of transparency on infrastructural development in Hargeisa, Somaliland. It assumed the null hypothesis (H₀) that there is no significant effect between transparency and infrastructural development in Hargeisa, Somaliland. By providing context-specific empirical evidence, the study contributes to the governance and urban development literature and offers practical insights for policymakers, municipal authorities, and development partners seeking to improve infrastructure delivery through enhanced transparency.

2. Literature review

2.1 Theoretical review

The study is guided by three theories to comprehensively explain the effects of transparency on infrastructural development in Hargeisa, Somaliland. No single theory sufficiently captures the multifaceted nature of transparency within governance and infrastructure development; therefore, Good Governance Theory, Principal–Agent Theory, and Institutional Theory are jointly employed to provide a robust analytical framework. These theories collectively address the normative, behavioural, and institutional dimensions of transparency, enabling a more complete understanding of its role in enhancing the development of infrastructure project outcomes.

2.1.1 Good Governance Theory

Good Governance Theory emerged prominently in the late 1990s and early 2000s, largely championed by international development organisations such as the United Nations Development Programme (UNDP) and the World Bank. This theory arose as a response to widespread governance failures observed in developing countries, where a lack of transparency, accountability, and public participation hindered sustainable development and service delivery. Good Governance Theory conceptualises governance as a system characterised by openness, fairness, accountability, responsiveness, and the rule of law. It posits that government institutions must operate transparently and inclusively, with decision-making processes accessible to citizens and public officials held accountable for their actions. Transparency, as a fundamental pillar of good governance, is not merely about access to information but encompasses the proactive disclosure of relevant data that enables citizens to engage meaningfully in governance processes and monitor public resource utilisation.

The core assumptions of Good Governance Theory emphasise that transparent institutions reduce corruption and inefficiencies, enhance trust between the government and the governed, and facilitate improved developmental outcomes. This theory's applicability to infrastructural development is direct and critical. Infrastructure projects, often involving large capital outlays and complex stakeholder engagement, are particularly vulnerable to corruption and mismanagement when transparency is lacking. The theory suggests that when transparency is institutionalised in the planning, budgeting, and implementation phases of infrastructure development, it leads to better oversight, minimises leakages of public funds, and ensures that projects meet their intended objectives. In the context of Hargeisa, Somaliland, where governance structures are evolving, and challenges such as corruption and weak institutional frameworks persist, Good Governance Theory offers a normative foundation for advocating transparency as an essential ingredient for the successful delivery of infrastructure services.

Despite its broad applicability, Good Governance Theory has limitations. Its normative nature means it often prescribes ideals without sufficiently addressing the practical enforcement of transparency, especially in settings where institutional capacity is limited or political will is weak. The theory also tends to underplay the complexities of power relations and the incentives driving actors who may resist transparency reforms. These shortcomings highlight the need to supplement Good Governance Theory with frameworks that explain the mechanisms through which transparency is operationalised and enforced, particularly in dynamic political and institutional contexts.

2.1.2 Principal–Agent Theory

Developed in 1976 by Michael Jensen and William Meckling, Principal–Agent Theory is a cornerstone in organisational economics that explores the dynamics between principals, who delegate authority, and agents, who execute tasks on behalf of principals. The theory is grounded in the recognition that agents may have different motivations from principals and typically possess more information about their actions, leading to information asymmetry. This divergence can result in agents pursuing their own interests at the expense of principals, a problem commonly referred to as moral hazard or opportunism. The central premise of Principal–Agent Theory is that mechanisms such as monitoring, incentives, and, importantly, transparency can be employed by principals to align agents' behaviours with their objectives.

In infrastructural development, this theory is highly pertinent because projects usually involve a multiplicity of actors: government agencies, contractors, consultants, and community representatives, each acting as agents for the broader public or funding institutions that serve as principals. Transparency functions within this framework as a tool to reduce information asymmetry by ensuring that principals have timely, accurate, and comprehensive information about project progress, resource utilisation, and compliance with contractual obligations. This enables principals to monitor agents effectively and hold them accountable for performance, thereby reducing the likelihood of corruption, cost overruns, or project delays. Consequently, Principal–Agent Theory provides a micro-level explanation of how transparency mechanisms operate to mitigate risks inherent in delegated governance arrangements typical of infrastructure projects.

However, Principal–Agent Theory is sometimes criticised for its relatively narrow focus on economic rationality and contractual relationships, potentially overlooking broader social, cultural, and institutional factors influencing agent behaviour. It assumes actors

are primarily motivated by self-interest, which may oversimplify the complexity of governance in public sector settings where political, social, and normative considerations are significant. Nonetheless, when combined with Good Governance Theory, Principal–Agent Theory enriches the analytical framework by explaining how transparency can be practically implemented as a control mechanism to reduce corruption and improve project outcomes in the infrastructural sector.

2.1.3 Institutional Theory

Institutional Theory, developed extensively by scholars such as Douglass North in the 1990s, offers a sociological and organisational perspective on governance by emphasising the role of institutions—defined as formal rules, informal norms, and shared cognitive frameworks—in shaping human behaviour and organisational practices. This theory holds that institutions provide stability and meaning by embedding routines and practices within organisations and societies, thereby reducing uncertainty and guiding predictable conduct. Transparency, within this perspective, is understood as an institutionalised norm or practice that becomes embedded within governance structures, shaping how decisions are made and how resources are managed.

The relevance of Institutional Theory to the study lies in its explanation of how transparency transcends being a mere policy prescription to become part of the organisational culture and standard operating procedures in the public sector. Institutionalisation of transparency implies that it is accepted, expected, and routinely practised within government agencies responsible for infrastructure development. This helps to legitimise governance processes, ensure compliance with rules and regulations, and foster stakeholder trust. In the context of Hargeisa, Somaliland, where formal institutional frameworks are still developing and informal practices often coexist with formal rules, Institutional Theory highlights the challenges and opportunities of embedding transparency as a lasting practice within infrastructure governance systems.

Institutional Theory’s broad and systemic viewpoint complements the other two theories by shifting the focus from individual actors and normative ideals to the broader institutional environment that sustains or undermines transparency. However, the theory may be less effective in addressing the motivations and incentives of individual agents, which are better captured by Principal–Agent Theory. Thus, it completes the theoretical framework by providing insights into how transparency can be sustained over time through institutional structures and cultural norms.

2.1.4 Integration and Complementarity of Theories

By integrating Good Governance Theory, Principal–Agent Theory, and Institutional Theory, this study adopts a comprehensive framework that spans normative ideals, micro-level mechanisms, and macro-level institutional contexts. Good Governance Theory establishes transparency as an essential normative principle for effective governance and development. Principal–Agent Theory offers the tools to understand how transparency functions to reduce information asymmetry and opportunism among actors involved in infrastructure projects. Institutional Theory adds depth by explaining how transparency becomes embedded in the routines and cultures of public institutions, ensuring its persistence and effectiveness.

This multi-theoretical approach addresses the limitations inherent in each theory when applied alone. While Good Governance Theory emphasises what transparency ought to be, Principal–Agent Theory clarifies how transparency can be operationalised and enforced, and Institutional Theory explains the conditions under which transparency practices become institutionalised and sustained. Their complementarity allows the study to analyse transparency not only as a policy ideal but also as a practical and systemic phenomenon that influences infrastructural development in a complex governance setting like Hargeisa, Somaliland.

2.1.5 Theoretical Gaps and Justification for the Study

Despite the explanatory power of these theories, they do not fully account for the complex realities of emerging governance systems like Somaliland’s, where institutional capacities are evolving, and informal practices may dominate formal rules. There is limited understanding of how transparency functions in such contexts and its direct impact on infrastructural development. This theoretical gap underscores the necessity of this study, which seeks to contribute context-specific knowledge and adapt the existing theoretical frameworks to better reflect the realities of transparency and infrastructural development in Hargeisa.

In sum, Good Governance Theory, Principal–Agent Theory, and Institutional Theory collectively inform the study by framing transparency as a normative imperative, a control mechanism, and an institutionalised practice. These perspectives guide the formulation of research hypotheses and the interpretation of empirical findings, enabling a multidimensional understanding of transparency’s effects on infrastructural development. By applying this integrated theoretical lens, the study aims to offer insights that are both academically rigorous and practically relevant for enhancing transparency and governance in the infrastructure sector of Hargeisa, Somaliland.

3. Methodology

This study employed a descriptive and correlational research design. The descriptive approach was used to systematically observe and describe the current state of transparency and infrastructural development in Hargeisa, Somaliland. The correlational design aimed to examine the strength and direction of the relationship between transparency and infrastructural development. The target population consisted of 230 stakeholders involved in infrastructure development, including government officials, contractors, project managers, and affected community members. Using Slovin’s formula with a 5% margin of error, a sample size of 146 respondents was determined to ensure representativeness.

Data collection involved structured questionnaires to capture quantitative measures of transparency and infrastructure status, complemented by semi-structured interviews for qualitative insights. Quantitative data were analysed using SPSS version 25 with descriptive and inferential statistics, including correlation and regression analysis. Qualitative data were thematically analysed to identify key patterns and insights. Validity was ensured through questionnaire pre-testing and expert review, while reliability was confirmed using Cronbach’s alpha for scale items. Ethical protocols, including informed consent and confidentiality, were strictly followed throughout the study.

4. Results

Descriptive Analysis of the Effects of Transparency on Infrastructural Development

Table 1: Descriptive Analysis of the Effects of Transparency on Infrastructural Development

Items	Mean	Std. Deviation	Interpretation
Lack of transparency can negatively affect the funds allocated to build good roads and bridges.	3.35	.691	Very High
Transparency is more important in the case of infrastructure projects because of their huge capital outlays.	3.47	.563	Very High
When there is transparency citizen can be aware of the budgets allocated to infrastructural development.	3.32	.638	Very High
Transparency ensures that infrastructure sectors such as roads and bridges are designed in an appropriate way.	3.59	.500	Very High
When there is transparency, corruption declines, and the people can get good roads.	3.53	.662	Very High
Average Mean	3.45	.610	Very High

Source: Primary data, 2023.

According to the results of Table 1, for the statement “Lack of transparency can negatively affect the funds allocated to build good roads and bridges,” respondents expressed a very high level of agreement, with a mean score of 3.35 and a standard deviation of 0.691. This suggests that most participants perceive transparency as crucial in ensuring proper allocation and utilisation of funds for infrastructure projects. During interviews, the informant noted:

“When financial information isn’t clear, resources get delayed or misused, which slows down road projects” (KII2, 2023). This observation supports the quantitative result by illustrating how opaque financial processes disrupt infrastructure delivery.

For the statement “Transparency is more important in the case of infrastructure projects because of their huge capital outlays,” the mean score of 3.47 (SD = 0.563) indicates strong consensus on the significance of openness in managing large infrastructure budgets. During the interview, the informant remarked:

“Because these projects involve substantial sums, openness is necessary to prevent misuse and ensure funds are spent properly” (KII4, 2023). This insight echoes the quantitative responses by highlighting transparency’s role in safeguarding project resources.

Respondents also agreed, with a mean of 3.32 (SD = 0.638), that transparency enables citizens to be aware of the budgets allocated to infrastructural development. This implies that openness in financial disclosures allows the public to have access to critical information regarding how resources are distributed and spent. During the interview, the informant noted:

"When people know where money is going, they feel empowered to hold officials accountable and monitor progress" (KII1, 2023). This insight aligns with the quantitative findings, showing that transparency fosters public engagement.

The statement "Transparency ensures that infrastructure sectors such as roads and bridges are designed appropriately" received the highest mean score of 3.59 (SD = 0.500), indicating very strong agreement among respondents. This suggests that transparency is perceived as a crucial factor in maintaining quality standards during the planning and design phases of infrastructure projects. During the interview, the informant stated:

"Clear and open procedures encourage adherence to quality standards, which leads to better-built roads and bridges" (KII6, 2023). This qualitative input complements the quantitative data by emphasising transparency's role in quality assurance.

Finally, the perception that "When there is transparency, corruption declines and the people can get good roads" scored a mean of 3.53 (SD = 0.662), demonstrating a strong belief that transparency acts as a deterrent to corruption and contributes to better infrastructure outcomes. During the interview, the informant remarked:

"When processes are open, corruption opportunities decrease, so communities get higher quality roads" (KII3, 2023). This perspective reinforces the quantitative findings, underscoring transparency's impact on reducing malpractices.

Overall, the average mean score of 3.45 (SD = 0.610) reflects a very high consensus that transparency significantly improves infrastructural development outcomes in Hargeisa. The qualitative responses deepen the understanding of how transparency operates in practice, complementing and enriching the quantitative results.

Regression Analysis of the Effects of Transparency on Infrastructural Development

Table 2: Regression Analysis of the Effects of Transparency on Infrastructural Development

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.607 ^a	.369	.357	.49975		
a. Predictors: (Constant), Transparency						
ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.168	1	8.168	32.706	.000 ^b
	Residual	13.986	144	.250		
	Total	22.154	145			
a. Dependent Variable: Infrastructural development						
b. Predictors: (Constant), Transparency						
Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.776	.352		2.206	.031
	Transparency	1.237	.109	.806	11.317	.000
a. Dependent Variable: Infrastructural development						

Source: Primary data, 2023.

Table 2 shows that the regression analysis for transparency's impact on infrastructural development reveals a model summary with an R value of 0.607, suggesting a moderate to strong positive relationship between transparency and infrastructural development. The R Square value of 0.369 indicates that 36.9% of the variance in infrastructural development can be explained by transparency. This is a significant proportion, showing that transparency is a crucial factor influencing infrastructural development. The Adjusted R Square of 0.357, which adjusts for the number of predictors, reinforces the robustness of the model, indicating that the relationship holds when accounting for model complexity. The standard error of the estimate is 0.49975, reflecting the average deviation of the observed infrastructural development values from those predicted by the model. Based on these results, the study rejects the null hypothesis and accepts the alternative hypothesis, concluding that transparency has a statistically significant positive effect on infrastructural development in Hargeisa, Somaliland.

The ANOVA results indicate that the regression model is statistically significant, with an F-value of 32.706 and a p-value of 0.000. This significance level shows that the regression model effectively predicts infrastructural development based on the transparency

variable. The high F-value and the p-value well below 0.05 confirm that the model is not due to chance and that transparency significantly contributes to the variability in infrastructural development outcomes.

The coefficients from the regression analysis provide further insights into the relationship between transparency and infrastructural development. The unstandardized coefficient for transparency is 1.237, meaning that for every unit increase in transparency, infrastructural development increases by 1.237 units. The standardized coefficient (Beta) of 0.806 highlights a strong positive correlation between transparency and infrastructural development, indicating that transparency is a powerful predictor of development outcomes. The t-value for transparency is 11.317 with a p-value of 0.000, underscoring the high statistical significance of transparency's impact on infrastructural development. This strong relationship suggests that transparency plays a critical role in enhancing the quality and effectiveness of infrastructure projects.

The results of the regression analysis underscore the vital role of transparency in influencing infrastructural development in Hargeisa. The substantial R Square value indicates that transparency has a meaningful impact on development outcomes. The significance of the model and the high Beta coefficient emphasise that greater transparency is associated with improved infrastructure quality. The findings suggest that increasing transparency in project management, financial oversight, and reporting can lead to more successful infrastructure initiatives, foster public trust, and enhance the overall effectiveness of development projects. Policymakers and practitioners should focus on implementing transparent practices to optimise infrastructure development and achieve better outcomes for the community.

5. Discussion

The findings of this show that transparency was very high, the study revealed with a mean of 3.45 and a standard deviation with (SD= .610) which had a very high mean on the scale that was used in the study. This means that the majority of respondents agreed that lack of transparency can negatively affect the funds attended to build good roads and bridges, transparency is more important in the case of infrastructure projects because of their huge capital outlays, when there is a transparency citizens can be aware the budgets allocated to infrastructural development, transparency ensures that infrastructure sectors such as roads and bridges are designed appropriately, and when there is a transparency the corruption declines and the people can get good roads. This implies that transparency is very crucial to infrastructure projects to ensure that material and non-material resources used to implement infrastructure projects are properly managed. Also, this enables citizens to recognise whether budgets allocated to infrastructural development are utilised effectively and efficiently.

The results from both descriptive and inferential analyses demonstrate a statistically significant effect of transparency on infrastructural development in Hargeisa. Respondents consistently emphasised that greater openness in project budgeting and implementation leads to improved accountability and reduced corruption. These findings underscore the critical role transparency plays in ensuring infrastructural development.

These empirical findings align closely with Good Governance Theory, which posits that transparency is a fundamental pillar of effective governance systems. According to this theory, transparent institutions facilitate trust between citizens and government entities by making information accessible and decision-making processes open, which, in turn, enhances project success and public satisfaction. In Hargeisa, the emphasis on transparent budget disclosure and participatory oversight reflects this normative ideal of good governance.

Moreover, the study's observation that transparency serves as a monitoring mechanism to reduce information asymmetry between principals (citizens and funders) and agents (contractors and officials) supports Principal-Agent Theory. This theory explains how transparency provides principals with the necessary information to hold agents accountable and minimise opportunistic behaviours that could otherwise undermine infrastructure project outcomes. Additionally, the institutionalisation of transparency practices within local government agencies, as reported by participants, exemplifies Institutional Theory. The embedding of transparency into organisational routines and reporting requirements suggests that such practices are becoming part of the governance culture in Hargeisa, thus ensuring the sustainability of transparency efforts beyond isolated projects.

While all three theories provide valuable insights, this study is primarily underpinned by Good Governance Theory, as it offers the broad normative framework that situates transparency as essential for effective infrastructural development. The complementary contributions of Principal-Agent and Institutional theories enrich the analysis by explaining, respectively, the mechanisms through which transparency controls agent behaviour and the organisational context that sustains such practices over time. Together, these theories offer a comprehensive understanding of how transparency influences infrastructural development in Hargeisa, Somaliland.

The findings were in line with Kaufmann & Bellver, (2015), who noted that the complex nature of infrastructure projects makes it vulnerable to corruption and mismanagement. Research has indicated that the lack of transparency in infrastructure can adversely affect outcomes, and more so in developing countries. Given the potential benefits that can be realized as a result of an increase in

transparency, several international agencies are increasingly focusing on policies that aim to improve this (Kaufmann & Bellver, 2015).

These results were also true according to the views of Estache and Trujillo (2019) that the issue of transparency is even more important in the case of infrastructure projects because of their huge capital outlays, their monopoly nature, their widespread societal impact and the generally long duration of the contracts. It has been noted that favouritism, fraud, cronyism, patronage, embezzlement, state capture or cash bribes are all concepts commonly associated with the delivery of infrastructure services in many countries of the world, rich or poor.

The findings were also in line with OECD (2017), which emphasised that the benefits of transparency in public procurement and other areas have been widely accepted (Schooner, 2002). The issue of transparency is even more important in the case of infrastructure projects because of their huge capital outlays, their monopoly nature, their widespread societal impact and the generally long duration of the contracts. It has been noted that favouritism, fraud, cronyism, patronage, embezzlement, state capture or cash bribes are all concepts commonly associated with the delivery of infrastructure services in many countries of the world, rich or poor (Estache & Trujillo, 2019).

The findings imply that transparency should be viewed as a core governance strategy rather than an optional administrative practice in infrastructural development. Transparency contributes to improved decision making, responsible use of public resources, and early identification of inefficiencies throughout the project cycle. When transparency is consistently applied during planning, budgeting, procurement, implementation, and evaluation, it strengthens oversight and reduces the risk of mismanagement.

In addition, integrating transparency into institutional processes increases accountability among project implementers and enhances public trust in infrastructure initiatives. Open access to project information enables stakeholders to follow project progress and provide informed input where necessary. Over time, such practices lead to higher quality and more sustainable infrastructure outcomes. The findings therefore suggest that policymakers and practitioners should embed transparency within governance frameworks to promote efficient, accountable, and sustainable delivery of public infrastructure.

6. Conclusion

The findings on transparency reveal a significant and positive correlation between transparency and infrastructural development within the Ministry of Road Development and Transport in Hargeisa. High levels of transparency are associated with better public awareness of budget allocations and effective utilisation of resources, which in turn reduces corruption and enhances the quality of infrastructure such as roads and bridges. This underscores the importance of maintaining transparent practices in managing public infrastructure projects to achieve high standards in construction and service delivery.

More so the study concludes that transparency in public sector projects ensures accountability and reduces the likelihood of mismanagement and corruption. The study's findings suggest that implementing transparent processes not only facilitates better resource management but also fosters public trust and confidence in infrastructure projects. Thus, for the Ministry of Road Development and Transport, adopting rigorous transparency measures is crucial for the successful execution and sustainability of infrastructural development initiatives.

7. Recommendations

In light of the study findings, government institutions in Hargeisa should strengthen transparency in infrastructure projects by routinely disclosing key information on budgets, procurement processes, and project progress through official platforms and local media. The use of standardised reporting formats and clear timelines would improve consistency and public access to information.

Government institutions should introduce regular transparency audits conducted by independent bodies to assess the allocation and use of project funds. Public disclosure of audit findings would strengthen accountability, promote public confidence, and enable timely identification of financial irregularities. Establishing such audits as a routine oversight mechanism would ensure effective management of both financial and non-financial resources.

Government authorities should develop and enforce clear transparency policies within a defined timeframe. These policies should specify procedures for budget disclosure, project monitoring, and reporting. Capacity-building initiatives should accompany policy implementation to ensure that personnel understand and comply with transparency requirements, thereby reducing the risk of mismanagement and improving the effective use of public resources.

Public participation should also be enhanced by engaging citizens through consultative meetings during critical project stages and by providing accessible digital platforms for sharing project updates. Such measures would promote community oversight and increase accountability in infrastructure delivery.

The adoption of digital technologies, such as online project dashboards and open data systems, is recommended to facilitate real-time information sharing and monitoring. Finally, transparency efforts should be reinforced by strong anti-corruption measures, including whistleblower protection, transparent procurement systems, and enforcement of sanctions against malpractice, to improve infrastructure quality and public trust.

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