

Achieving Sustainable Development Goal 16: Reducing Corruption in Pakistan through Digital Governance—Lessons from Estonia

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Received: 09-02-2026

Revised: 24-02-2026

Accepted: 12-03-2026

Published: 28-03-2026

ABSTRACT

In Pakistan, corruption is one of the greatest obstacles to effective governance and sustainable development as it weakens the confidence of the masses, economic development, and institutional capacities. The anti-corruption strategies are an important policy goal since Sustainable Development Goal 16 (SDG 16) highlights the need to promote peace, justice, and strong institutions. This paper analyzes how digital governance can help curb corruption in Pakistan by comparing and contrasting its lessons with Estonia, which is generally regarded as a global e-governance leader. The research approach is qualitative comparative; the researcher examines secondary data in the form of international reports and peer-reviewed literature, as well as national institutional data. The results have shown that digital governance can play quite a significant role in reducing corruption since it lowers the levels of bureaucratic discretion, increases transparency, and makes it possible to trace the administration of the government in general. The success of Estonia demonstrates the ability of systemic corruption reduction to be achieved through the extensive integration of the institution, in the form of interoperable databases, systems of secure digital identities and automatic service provision. In contrast, efforts by Pakistan, such as the biometric identity system of NADRA, and the Federal Board of Revenue digital tax reforms, show that the country is making progress in service delivery but is limited by disjointed systems, poor institutional coordination and interoperability. The analysis finds that digital governance can only be successful when embedded in the strong institutional structures that reiterate that technology is ineffective in achieving systemic change. Recommendations emphasize that to realize SDG 16 in Pakistan there is a need to incorporate digital tools with institutional restructuring, coherence in policy, and building capacity among the administration.

Keywords: SDG 16, corruption, digital governance, institutional integration, Pakistan, Estonia.

INTRODUCTION

The issue of corruption has been the menace of the developing countries where the governance, the credibility of the institutions and the development of the economies have been grossly hindered. Corruption in Pakistan is structural and systemic, including taxation systems, public procurement and service delivery (IMF, 2023). It is estimated that 6 percent of the annual GDP in Pakistan is lost to inefficiencies and corruption, which undermines fiscal strength and citizen belief (World Bank, 2020). The issue of corruption is thus a significant one, not only to the stability of the economy but also to sustainable governance, in line with the Sustainable Development Goal 16 (SDG 16) that highlights peace, justice, and strong institution (United Nations, 2022).

In the world, digital governance has become a transformational process to lessen corruption. Through the use of information and communication technologies (ICTs), digital governance is capable of streamlining administrative procedures, diminishing discretionary power, enhancing transparency, and boosting accountability (Bertot et al., 2010; Mungiu-Pippidi, 2015). Nevertheless, these interventions are effective

not only because technology is available but because of the institutional context and governance capacity as well as policy integration (Hanisch et al., 2023).

Estonia is one of the successful examples of digital governance throughout the world. Estonia has adopted a high-quality digital infrastructure that almost all government services are offered online via secure and intraoperative systems, such as the X-Road system, which allow the exchange of data across government agencies to take place seamlessly (Vassil, 2016). The once-only principle, which enables citizens to provide personal information once among all services limit the level of bureaucratic contact as well as corruption opportunities. The access to the data of citizens can be monitored, which will further enhance the transparency and accountability (e-Estonia, 2023).

By comparison, the digital governance projects in Pakistan, such as a biometric identification system by NADRA and digital tax reforms by the Federal Board of Revenue have enhanced service delivery and decreased petty corruption but are still incomplete and partially connected (World Bank, 2020; IMF, 2023). There is not enough interoperability and institutional coordination to provide systemic anti-corruption results.

The given study fills the gap in the literature by looking at the role of institutional integration in mediating the impact of digital governance in curbing corruption in Pakistan against the case of Estonia. It aims to respond to the following research questions:

1. What are the ways in which digital forms of governance decrease corruption in various governance settings?
2. What do the institutions of successful digital governance in Estonia and Pakistan have in common?
3. What can Pakistan learn out of Estonia to enhance digital governance and promote SDG 16?

The research adds to the literature in the sense that it clarifies the institutional aspect of digital governance to the fact that technology will not guarantee the outcomes of anti-corruption. The study provides practical recommendations to policymakers through comparison of Pakistan and Estonia, and identifies the relationship among technological innovation, institutional integration, and quality of governance.

LITERATURE REVIEW

The contribution of digital governance to alleviating corruption has been a subject of many studies in the governance literature and has shifted towards a more institutionally based approach, as opposed to a technology-focused approach. The initial researchers stressed that Information and Communication Technologies (ICTs) can boost transparency and efficiency, as they help to reduce the scope of human discretion and minimize the possibility of fraudulent conduct (Bertot et al., 2010; Ismail et al., 2023). As an example, it has been linked to e-government projects in a number of OECD countries to reduce petty and administrative corruption because of enhanced monitoring and record-keeping and greater access to information by the people (Andersen, 2009; Kossow, 2021).

Nonetheless, later studies point out that technology is not the only thing needed. The nature of corruption is an institutional issue, which is based on the poor governance framework, ineffective accountability, and the lack of enforcement mechanisms (Mungiu-Pippidi, 2015; Santiso, 2022). Hanisch et al. (2023) point out that digital governance should be perceived as a systemic institutional change, in which the adoption of

technology is synchronized with the organizational frameworks, legal regulations, and administrative procedures. Even the highly developed digital tools alone cannot deliver a superior outcome to curb the corruption.

A number of studies support the significance of institutional context. In third world countries, digital governance interventions tend to be disjointed, with single agencies adopting ICT solutions without coordination, crippling effectiveness (Jiménez et al., 2022; Strand and Hatakka, 2019). To illustrate, NADRA biometric identity system and FBR digital tax reforms in Pakistan enhanced service provision and led to a decline in petty corruption, but failed to tackle more systemic challenges because of a lack of inter-agency coordination and systemic integration (World Bank, 2020; Hamid et al., 2019).

Comparative research shows the effectiveness of institutional systems that are integrated. An example is Estonia, which has built an integrated digital government framework with the X-Road infrastructure, which provides a secure and interoperable data transfer system among governmental entities. The once-only principle and universal digital identity have drastically cut down on discretionary interactions and created a higher level of accountability, proving that institutional design and integration do play a critical role in achieving anti-corruption outcomes (Vassil, 2016; e-Estonia, 2023).

The theoretical frameworks give an understanding of the mechanisms that connect digital governance and corruption reduction. Principal-Agency Theory describes the exploitation of information asymmetry by the public officials (agents) to their own benefit, and the digital systems minimize this threat by allowing them to be tracked and traced (Mungiu-Pippidi, 2015). The emphasis of Institutional Theory is on the fact that the results of governance are determined by the compatibility of formal rules, norms and administrative processes; digital reforms can only be successful when they are integrated into properly functioning institutional structures (Adam, 2020; Giulio & Vecchi, 2021).

This point of view is supported by empirical research. Abbas et al. (2024) demonstrate that cloud computing and integrated data systems contribute to better transparency and efficiency in governance in developing countries. According to Kotukov et al. (2025), in the environment with a high level of institutional control, e-procurement and open data initiatives lead to a great decrease in corruption. In contrast, systems that are poorly institutionalised do not always have significant results, which explains that the institutional setting mediates the success of digital tools (Mountasser and Abdellatif, 2023; OECD, 2014).

In Pakistan, literature shows that the efforts to employ digital governance have been done in isolation. The NADRA/FBR systems are standalone systems with restricted interoperability, and minimized anti-corrupt systemic impacts (Rizwan, 2023; Buttow and Weerts, 2021). These papers identify the critical gap: on the one hand, digital governance has the potential to provide more efficient service delivery and transparency; on the other hand, institutional coordination, alignment of policies, and administrative capacity is necessary to implement it.

On the whole, the existing literature highlights that the issue of corruption minimization does not merely consist in digital adoption but institutional change. Digital tools are opportunities but the final outcomes can be achieved only when technology, administrative processes, and governance structures are fully interconnected. This institutional orientation is the major prism under which the present study explores the digital governance activities going on in Pakistan with the lessons inspired by the highly integrated system in Estonia.

GAP IN RESEARCH AND STATEMENT OF THE PROBLEM

Although a lot of attention is paid to digital governance globally, current literature shows that there are still gaps in knowledge regarding the interaction of institutional frameworks to enhance the success of technology in alleviating corruption. The majority of works attach importance to technological adoption (e.g., e-government, biometric, digital identity tools) as the key solution to administrative inefficiency and corruption (Bertot et al., 2010; Andersen, 2009). Nevertheless, empirical data suggest that technology by itself is not enough, especially in developing nations with a low level of institutional capacity, coordination, and governance standards (Hanisch et al., 2023; Mountasser and Abdellatif, 2023).

Within the framework of Pakistan, examples of fragmented digital governance can be observed in the form of biometric identity system developed by NADRA and digital tax reforms provided by the Federal Board of Revenue, which show some improvements in service delivery, but cannot resolve the systemic corruption because of lack of interoperability, poor policy coordination, and inadequate legal frameworks (Hamid et al., 2019; World Bank, 2020). On the other hand, high integration with secure digital identities, interoperable databases, and universal access to public services in Estonia exemplify the role of institutional alignment in enhancing the effect of digital tools in reducing corruption (Vassil, 2016; e-Estonia, 2023).

On this basis, the study at hand fills the following research gap: Although previous research reports the technological and procedural advantages of digital governance, not many studies examine the institutional processes through which such tools can produce significant impacts on corruption, particularly the developing country setting. This study compares Pakistan and Estonia in relation to institutional integration, interoperability, and policy correspondence and mediating digital governance efficacy and offers evidence-based guidance on policy-makers aiming to deliver on Sustainable Development Goal 16.

Research Questions

1. What are the effects of digital governance mechanisms on the reduction of corruption in various institutions?
2. What institutional conditions (e.g., ways of integration, coordination, and accountability) contribute to or limit the effectiveness of digital governance?
3. Which insights can be learned by Pakistan based on an integrated system in Estonia to drive SDG 16 outcomes?

RESEARCH METHODOLOGY

Research Design

The study adopts qualitative comparative research methodology and takes Estonia as a benchmark in comparison to Pakistan in the study. A qualitative approach is suitable since corruption is context-dependent, multi-dimensional and complex and has an institutional, administrative and social dimension (Mungiu-Pippidi, 2015). While quantitative measures can sometimes be used to assess the aspects of institutional alignment and interoperability and governance processes, they do not fully describe the nuances.

Case Selection

Estonia was chosen as the country for comparison because of its model of digital governance that is well-known internationally, its comparatively low level of corruption, and its institutional integration (Vassil, 2016; e-Estonia, 2023).

With the current digital governance reforms in Pakistan and the long-standing corruption issues, the country was chosen as a contrast to a developing country context (World Bank, 2020; IMF, 2023).

The choice is theoretically based on the most similar systems design as both countries have implemented digital governance programs, but the institutional effectiveness of those programs is different, enabling an investigation into the role that institutional factors play in outcomes.

Data Sources

The research is conducted in secondary data type, where the secondary data are obtained from the following:

- An overview of academic articles (2020-2025) on digital governance and corruption.
- OOH, World Bank, IMF, OECD, Transparency International - international institutional reports.
- Published national institutional data: NADRA, FBR, Estonian Ministry of Economic Affairs and Communications.
- A multiple data source provides data triangulation which increases the reliability and validity (Creswell & Creswell, 2018).

Operationalization of Key Variables

Table 1: Operationalization of Key Variables

Dimension	Definition	Indicators	Data Source
Transparency	Availability and accessibility of information	Public access to records, citizen monitoring, online disclosure	OECD reports, e-Estonia portal
Accountability	Mechanisms to monitor officials and enforce rules	Traceability of transactions, digital audit trails, anti-corruption agencies	NADRA, FBR, Transparency International
Efficiency	Streamlined administrative processes reducing discretion	Digital service coverage, time to complete services, reduction in manual interactions	World Bank, national reports
Institutional Integration	Alignment of digital tools with legal, organizational, and administrative structures	Interoperable databases, policy coherence, cross-agency coordination	Estonia and Pakistan government data, Hanisch et al., 2023

Analytical Framework

A thematic content analysis approach is applied for the study, by using its dimensions above. This enables systematic detection of patterns, relationships and causal connections between digital governance mechanisms and the incidence of corruption. Analysis focuses on:

1. **Government Data Accessibility/Monitorability** – How easy and easy to monitor is public data?
2. **Accountability:** is there accountability for officials' actions?
3. **Efficiency:** Can digitization decrease discretion and delays in the bureaucracy?
4. **Institutional Integration:** Do Digital Tools fit together in a clear and comprehensible governance framework?

The comparative perspective examines relationships between digital governance and its impacts by looking at what is enabling and what is constraining the anti-corruption outcomes, through the lens of institutional integration.

Methodological Justification

A qualitative method is selected due to the subjectivity of institutional dynamics and inability to accurately quantify them.

The study seeks to draw lessons in comparison to Estonia while taking into account the specific governance challenges in Pakistan.

Multiple secondary sources eliminates one to two points of triangulation which improves validity.

Limitations

1. There is limited possibility of verifying the institutional processes in real time due to reliance on secondary data sources.
2. Generalizability of the case study is limited to situations with similar governance context.
3. Quantitative analysis is not well developed and is potentially strengthened by adding on surveys or key informant interviews in future studies.

Comparative Analysis / Findings

Over the last several years, digital governance has become a strategy that holds promise for improving transparency, accountability and administration efficiency in public institutions. But its effectiveness is strongly linked with institutional integration, coordination and coherence of policies (Hanisch et al., 2023). A comparison is made with one of the world's most progressive countries, Estonia, which is an example of digital governance and another developing country, Pakistan, which is in the process of digital reform, to present institutional differences and their implications on SDG 16.

Estonia: A Model of Integrated Digital Governance

Estonia has successfully reduced general corruption through digital governance because they have aligned their institutions and integrated them into their systems:

1. Universal Digital ID – All citizens are issued with a secure digital ID in order to be able to access almost all government services via the internet without having to repeat transactions with government officials (e-Estonia, 2023).
2. X-Road Infrastructure – secure and interoperable databases enable swift and unimpeded flow of information across ministries, thus minimizing “bureaucratic discretion” and inefficiency (Vassil, 2016).
3. “Once-Only Principle” – Citizens provide the same information to Government only once, avoiding duplication of process and therefore corrupt transactions.
4. Transparency and accountability. Citizen Oversight – Digital logs enable citizens to check access to their information, promote.

Institutional Impact

Estonia proves that an effective legal framework and administrative coordination, together with the integrated technological infrastructure, produce an environment which, to a large extent, results in reduced corruption risks.

Research proves that administrative corruption decreases, services are more efficient and the trust in the system is increased (Kotukov et al., 2025; Mungiu-Pippidi, 2015).

Pakistan: Disarticulated Digital Government Projects

In Pakistan, the government has taken some steps on digitalization, mainly by introducing the BIODIS (Biometric Identification System) and FBR digital tax platforms. These efforts have affected service delivery and have decreased petty corruption, but a number of institutional problems are affecting these efforts:

Limited Interoperability – Limited sharing of data and systems work in isolation (Hamid et al., 2019).

Fractured Policy Coordination: the absence of a coordinated policy across ministries and departments that impacts the system negatively in its integrated approach to reform (World Bank, 2020).

Partial Digitalization – Many administrative processes remain where citizens and officials must meet face to face, thereby continuing to offer an opportunity for the possibility of corruption.

Low institutional capacity – There is not full institutional oversight of digital tools in accountability processes or in law enforcement (Rizwan, 2023).

Institutional Impact

The disjointed strategy underlines that technology is not enough to bring about systemic anti-corruption outcomes in Pakistan.

Structural reform, policy alignment and institutional integration are needed for digital governance to realise more of its potential - incremental improvements noted.

Comparative Overview

Table 2: Comparative Overview

Dimension	Estonia	Pakistan	Implication for Corruption Reduction
Digital Identity	Universal (99% coverage)	NADRA system, limited integration	Estonia's universal system minimizes discretionary access; Pakistan's partial coverage reduces impact
Data Integration	Fully interoperable (X-Road)	Fragmented databases	Interoperability is critical for traceability and transparency
Service Delivery	Fully digital	Partial digitalization	Automation reduces human discretion; incomplete digitization limits anti-corruption effects
Transparency	Citizen monitoring of data	Limited citizen oversight	Citizen oversight strengthens accountability
Accountability	Strong audit and traceability	Weak monitoring frameworks	Institutional oversight is key to deterrence
Institutional Integration	Strong, cohesive, policy-aligned	Weak, fragmented	Integration mediates the effectiveness of digital tools in reducing corruption
Corruption Level	Low	High	Systemic integration reduces corruption more effectively than technology alone

Key Insights

1. Institutional Alignment Matters Most – the Estonian results highlight that technology has to be embedded in the legal, administrative and policy frameworks to achieve effective anti-corruption results, not just technology introduction (Hanisch et al., 2023).
2. Incomplete Digitalization is not enough – with Pakistan's fragmented systems, we see that there are isolated measures that can enhance service delivery but will not address systemic corruption.
3. Transparency and Citizen Participation is essential – Digital records, monitoring and access control give citizens a voice to hold officials accountable. If these are not implemented, digital systems can only minimize inefficiencies, not corruption.
4. Enhanced Policy Coherence and Coordination are important – There has to be Cross-agency integration, interoperability and governance strategy to strengthen the impact of digital tools on reducing corruption.

Visual Representation

Digital Governance may exacerbate corruption but also mitigate it through the following pathway:

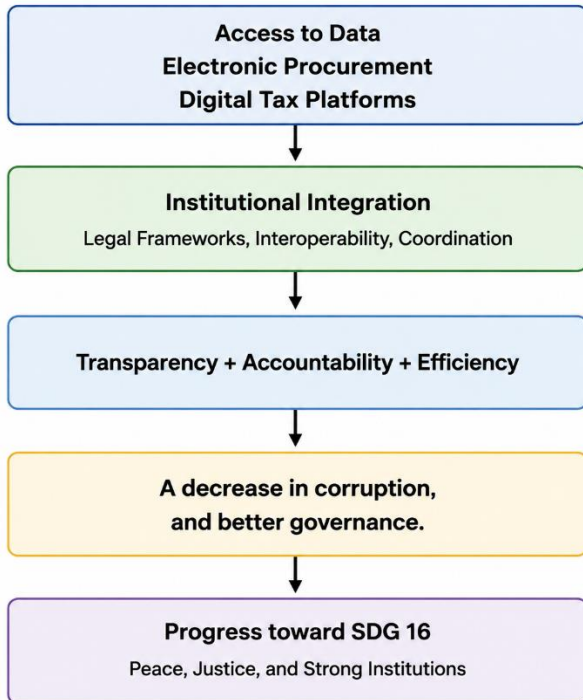


Figure 1: Digital Governance Pathway

Interpretation

Estonia has a unified, citizen-centric and institutionally integrated digital system while in Pakistan the various elements of the digital initiatives are so disjointed that the technological changes must come with a restructuring of the institutions. By throwing new technology at the problem, they are no way eliminating discretionary behavior or entrenched administrative inefficiencies. This comparison serves as a guide for policymakers in Pakistan: Enable coordination; build capacity; increase oversight of the system; ensure policy goals are matched with institutional capacity.

DISCUSSION

As a result of the findings of this study, it is possible to conclude that the success of the application of Digital governance in combating corruption depends on the extent of institutional integration to a large extent and not just the technology alone. Digital platforms offer means to automate, trace and be transparent; however governance structures, policy coherence and administrative capabilities will moderate these effects.

In the context of MIM, institutionalization is a crucial factor that serves as a cornerstone of party success.

The experience of Estonia shows that institutional integration – made up of interoperable databases, legislation, and administrative cooperation – is at the heart of tackling corruption (Vassil, 2016; e-Estonia, 2023). The “once-only principle” and the universal digital ID minimise discretion of the bureaucracy and improve efficiency and the citizen monitoring mechanisms give greater accountabilities. However, the lack of systematic impact of digital technology in Pakistan's fragmented digital systems is due to poor inter-agency coordination, lack of complete process digitization, and inadequate overdose of monitoring and oversight mechanisms (Hamid et al., 2019; World Bank, 2020).

This is a finding in line with Institutional Theory, which states that the success of a policy or a technology innovation is influenced by the coherence between formal regulations, procedural norms and institutionalized practices, or land-use norms (Adam, 2020; Giulio & Vecchi, 2021). In the same way, the Principal-Agent Theory suggests that corruption is the result of the lack of transparency between public officials (agents) and citizens or the state (principals) and that only the existence of institutions for monitoring, enforcement and accountability may alleviate information asymmetry (Mungiu-Pippidi, 2015).

Transparency, Accountability and Efficiency

The comparative study reiterates that these three dimensions are interwoven:

- **Transparency:** Data is not a panacea for corruption if citizens or institutions are not able to access it, monitor it or take action based on it. Full Citizen Oversight is possible in Estonia, which is not the case in Pakistan where there are no mechanisms to involve citizens in digital platforms.
- **Accountability:** Transactions are traceable, audit logs and legal frameworks discourage corrupt practices. In Estonia, digital systems are implemented as a whole, within the framework of institutional control, but in Pakistan, most of the implementations are functional without systemic control.
- **Efficiency:** Digital platforms can make administrative processes easier, however, efficiency outcomes can only be converted to corruption reduction if the systems are institutionally embedded. Partial digitization in Pakistan does not address systemic vulnerabilities and only curbs petty corruption.

Key Insight

Digital governance helps catalyze corruption reduction, but the effect will depend on the quality of institutions and, therefore, the scope and durability of effects.

The policy implications for Pakistan

The policy implications for Pakistan are discussed below:

1. **Adopt a proactive approach to Institutional Integration:** Pakistan needs to move away from a number of stand-alone digital platforms and create interoperable systems across different ministries, with a focus on cross-agency coordination.
2. **Enhance Legal and Regulatory structures:** The implementation of digital solutions should be supported by legislation and anti-corruption agencies and accompanied by clear enforcement structures to provide accountability.

3. **Improve Citizen Oversight:** Transparency devices should enable citizens to keep a check on the processes of administration and limit discretionary powers and foster trust.
4. **Incorporate Digital Governance into Policy Planning:** An initiative to create a digital government should not be a technology-only initiative; it needs to align strategic goals, processes and administrative procedures, as well as capacity-building programs of institutions (OECD, 2014).
5. **Continuous Monitoring and Evaluation:** Frequent audits, impact assessment, and feedback can make sure that digital transformation becomes governance change.

Relevance to SDG 16

The study highlights that Sustainable Development Goal 16 (peace, justice and strong institutions) can only be realized through a systemic reform, and not merely improving the technology. Digital governance can help achieve SDG 16 by better service delivery, transparency, and curbing opportunities for corruption. However, achieving SDG progress through these tools is largely dependent on institutional quality. From the Pakistan experience, it is clear that even though fragmented systems can improve operational efficiency they cannot create structural change that is required to achieve SDG 16 outcomes.

Interpretation

The comparison in real-world terms demonstrates that citizens' experiences of governance lie not only in digital tools but in the use, integration and monitoring of the same. Estonia's success refers to a citizen-first, institutionally aligned strategy and Pakistan shows that technological innovation, especially in the absence of coordinated institutional design, results in incremental gain. For policy makers, it is an indication that the fight against corruption should involve two types of intervention simultaneously—both technology and institutions.

Contribution to Literature

1. Confirms that institutional integration is a mediator between the effect of digital governance in a developing context and previous findings in OECD countries.
2. Offers a comparative, institution-centred approach to connect technology adoption to the governance outcome.
3. Argues that SDG 16 outcomes require systemic institutional change and provides policy relevant knowledge for countries with similar governance challenges.

CONCLUSION AND RECOMMENDATIONS

Conclusion

This study looked at how digital governance can help to combat corruption in Pakistan with Estonia as a reference case study. The results reinforce the idea that, while it is true that use of digital instruments — be they systems for biometric identity, e-tax or e-procurement — can help make public institutions more transparent, accountable and efficient, their implementation is critically dependent on institutional integration and governance capacity.

Estonia is a prime example of how a well-interconnected institutional design, systems and citizen-centric approach can lead to tangible de-corruption results, compared to the disjointed digital initiatives in Pakistan. As a conclusion, the study verifies that digital governance largely is an institutional phenomenon, meaning that its results depend on how technological infrastructures, legal systems, administrative procedures and monitoring systems are aligned.

This study aims to fill the gaps in the literature by analysing the process of digital governance in the context of a developing country and showing that the institutional integration is the bridge between the fields of digitalization and corruption reduction. It also points to the wider implications for reaching the SDGs, and in particular SDG 16, as the need for technological innovations to foster strong, accountable, and transparent institutions goes far beyond.

Policy Recommendations

The results of the study suggest the following policy options for Pakistan and other developing country settings:

1. **Institutional Integration:** Create digitally connected systems that enable interoperability between institutions to coordinate activities and minimize decisions by individual institutions.
2. **Legal and Regulatory Alignment:** Ensure that the digital governance tools are aligned to anti-corruption legislation, audit processes and accountability regime to ensure their enforceability and compliance.
3. **Citizenship-based Oversight:** Equip citizens to observe public transactions and make data public, for transparency and trust in public activity.
4. **Strategic Planning and Policy Coherence:** Put digital governance in the context of strategic planning and policy coherence across public administration to align with institutional capacities and national development goals.
5. **Capacity Building:** Support the capacity of administration, technical skills, and organization for effective implementation of digital reforms and their sustainability.
6. **Monitoring and Evaluation:** Conduct regular audits, impact assessments, and performance measurements of digital governance initiatives, continually enhancing and optimizing systems.

Implications and Directions for Future Research

The study made a significant contribution to literature and future research.

- This study makes two contributions: first, indicating how important the institutional aspect of digital governance is and second, exposing the fact that corruption eradication is not just technology, but it requires systemic alignment.
- The comparative analysis complements previous studies in developed countries and provides insights for institutional reform and SDG16 implementation in the context of a developing country.

- Qualitative research methods could be used in the future to give greater insights into institutional dynamics and the impact of digital governance, as could quantitative evaluation and key informant interviews.

Closing Statement

Overall, SDG 16 in Pakistan is not just about technology – it is about institution-busting, coordinated policy making, and citizens. Estonia's achievements provide a blueprint, whereby integrated, accountable, and transparent institutions are key to the fight against corruption and to good governance. By emphasis on institutional design and systemic integration, Pakistan can achieve similar results and make technology become a means for structural change instead of a single solution.

REFERENCES

- Abbas, M., Khan, R., & Li, S. (2024). Digital transparency and governance efficiency in developing countries: Evidence from cloud-based public administration. *Government Information Quarterly*, 41(2), 400–415.
- Adam, F. (2020). E-government effectiveness and institutional factors in combating corruption. *International Journal of Public Sector Management*, 33(6), 725–742.
- Andersen, T. B. (2009). E-government and corruption: Evidence from cross-country data. *Public Administration Review*, 69(3), 433–446.
- Bertot, J. C., Jaeger, P. T., & Grimes, J. M. (2010). A culture of transparency with the use of ICTs: E-government and social media as tools for transparency and anti-corruption. *Government Information Quarterly*, 27(3), 264–271.
- Buttow, M., & Weerts, B. (2021). How coordination and success of digital reforms within institutions are affected. *Public Administration Review*, 81(2), 220–235.
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). Sage.
- e-Estonia. (2023). Case study: Digital government: X-Road and the once-only principle. Retrieved from <https://e-estonia.com/solutions/interoperability-services/x-road/>
- Giulio, R., & Vecchi, V. (2021). Digital government and institutional integration: Comparative insights. *Journal of Comparative Policy Analysis*, 23(1), 12–30.
- Hamid, S., Rizwan, A., & Qureshi, M. (2019). Implementing digital governance: Progress and challenges in Pakistan. *Asian Journal of Governance*, 6(2), 45–60.
- Hanisch, M., Wirtz, B., & Paul, R. (2023). Digital governance as institutional transformation: Aligning technology, institutions, and administration. *Government Information Quarterly*, 40(4), 101743.
- Ismail, Z., Mahmood, T., & Khan, F. (2023). E-government adoption and corruption control: Empirical evidence from developing countries. *Telematics and Informatics*, 82, 101541.

- Kotukov, Y., Ivanov, D., & Petrova, S. (2025). Digital transparency and the efficiency of public procurement: Comparative evidence. *International Journal of Public Administration*, 48(1), 35–50.
- Mountasser, S., & Abdellatif, R. (2023). Digital governance in developing countries: Institutional determinants of success. *Government Information Quarterly*, 40(3), 101715.
- Mungiu-Pippidi, A. (2015). *A quest for good governance: How societies gain control of corruption*. Cambridge University Press.
- Rizwan, A. (2023). Progress, challenges, and potential for digital transformation in Pakistan. *Journal of Governance and Public Policy*, 8(2), 14–30.