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EGDI Impact on Control Corruption in Africa: Exploring E-Government Development Index

Abstract

This study explores the E-Government Development Index (EGDI) and its role in combating corruption in Africa. The main aim is to analyze how EGDI impacts corruption control strategies across African nations. This research is academically and practically important as it examines the intersection of e-government and corruption mitigation, providing valuable insights for policymakers and stakeholders. Using a systematic analysis of Scopus articles, the study reveals that advancements in e-government, measured by EGDI, enhance transparency and efficiency in public administration. The findings indicate that a well-implemented e-government infrastructure, reflected in a higher EGDI, positively influences anti-corruption efforts and governance practices across diverse African contexts. The study concludes that EGDI is crucial in shaping governance frameworks and fostering accountability. This research fills gaps in the literature by illuminating the nuanced relationship between EGDI metrics and corruption mitigation. The findings provide actionable insights for policymakers and stakeholders engaged in governance and development initiatives, highlighting the role of e-government in promoting sustainable development across Africa.

Keywords

online service index; human capital index; telecommunication infrastructure index

Introduction

The advent of e-government initiatives has heralded an era of digital transformation, promising heightened efficiency and transparency within governmental processes (Andersson Nystedt et al., 2023). Central to evaluating these advancements is the E-Government Development Index (EGDI), a metric devised to gauge the digital readiness and efficacy of government operations (Wu et al., 2022). This index serves as a pivotal benchmark for assessing a nation's e-government

infrastructure and its potential impact on various societal facets. However, amid the strides toward digitalization, one critical dimension remains under scrutiny corruption. Corruption, a longstanding impediment to governance effectiveness, stands as a formidable challenge across many African nations. In this context, understanding the interplay between EGDI metrics and the efficacy of corruption control measures emerges as a critical pursuit.

This study aims to unravel the complex relationship between EGDI and corruption control, focusing specifically on African nations. Drawing insights from a diverse array of scholarly works, encompassing studies on e-government frameworks, corruption mitigation strategies, and EGDI assessments, this research endeavors to illuminate the nuanced dynamics between e-government development and the control of corruption within the African landscape. Despite the widespread adoption of e-government frameworks in Africa, there is a limited understanding of how the development and implementation of these frameworks, as measured by the **EGDI**, specifically contribute to the control of corruption. **This gap in knowledge necessitates a deeper investigation into the relationship between e-government development and anti-corruption efforts** (Aswegen et al., 2021). Previous studies about Digital Governance and Anti-Corruption Measures in Africa have predominantly centered on the general benefits of e-government without delving deeply into its specific influence on corruption, particularly within the African context. Addressing this gap, the research problem is framed around the need to explore how EGDI impacts corruption control strategies in African nations. The primary objectives are to assess the correlation between EGDI and corruption mitigation and to provide actionable insights for policymakers. The study will analyse various African countries, considering their unique socio-political landscapes and e-government infrastructures. The rest of the article is structured as follows: the next section reviews the relevant literature, highlighting key studies and identifying gaps. Following this, the methodology section outlines the systematic analysis approach employed. The subsequent section presents the findings, and the discussion section interprets these results in the context of existing theories and practices. Finally, the conclusion summarizes the study's contributions and implications for future research and policy development.

The E-Government Development Index (EGDI)

The E-Government Development Index (EGDI) is a measure used by the United Nations to assess and rank the development and effectiveness of e-government services in various countries. It evaluates the digital readiness and capacity of governments to provide online services, interact with citizens electronically, and use digital platforms to enhance governance (Mutula, 2008b) In African countries, the E-Government Development Index (EGDI) plays a critical role in shaping governance, combating corruption, and enhancing public service delivery. While Africa is a diverse continent with varying levels of technological advancement and governance, the influence of EGDI on controlling corruption can be observed through several notable examples (Masyk et al., 2023).

The EGDI is not designed to capture e-government development in an absolute sense; rather, it aims to give a performance rating of national governments relative to one another. This raises the question of whether EGDI measurements across African countries have been employed at a deeper level than the 'ordinary EGDI'. To understand how EGDI influences corruption control, EGDI measures the digital readiness and capacity of governments, encompassing online service provision, telecommunication infrastructure, and human

capital. In nations like Rwanda, the government has made significant strides in leveraging digital technology to combat corruption and improve service delivery (Bougherra et al., 2023). Rwanda's commitment to e-governance, reflected in its high EGDI ranking, has streamlined administrative processes, reduced bureaucracy, and minimized opportunities for corrupt practices. For instance, the use of digital platforms for services like land registration has reduced the potential for bribery and manipulation by eliminating intermediaries and enhancing transparency (Mutula, 2008b).

Another compelling case is found in Kenya, where initiatives like the Huduma Centres have enhanced citizen access to government services (Chen & Li, 2024). By providing a one-stop shop for various services through digital channels, Kenya has reduced the need for face-to-face interactions with officials, thereby curbing opportunities for corruption. Additionally, the digital platform eCitizen has simplified procedures for services like business registration and driver's license acquisition, minimizing corruption risks (Kabbar, 2020) associated with complex bureaucratic procedures. However, while these examples highlight progress, challenges persist across many African nations (Dias, 2019). Disparities in digital infrastructure and access to technology create digital divides, limiting the reach and impact of e-government initiatives (Doran et al., 2023). Moreover, some countries face cybersecurity threats and inadequate legal frameworks (Kaya, 2020), undermining the effectiveness of digital systems in combating corruption.

In countries where the EGDI remains relatively low, such as parts of sub-Saharan Africa, there is a pressing need for comprehensive strategies to improve e-government capabilities and evaluation systems (Chung, 2019). For instance, countries like Nigeria and Ghana have taken steps to enhance their EGDI by investing in digital infrastructure and implementing online platforms for government services. However, as noted by the UN, "the EGDI is not designed to capture e-government development in an absolute sense; rather, it aims to give a performance rating of national governments relative to one another." This raises the question of whether EGDI measurements across African countries have been employed at a deeper level than the "ordinary EGDI." The effectiveness of these initiatives in curbing corruption is contingent upon sustained efforts to ensure transparency, accountability, and the active involvement of citizens in governance processes. While EGDI holds substantial promise, its full potential in driving e-government advancements and corruption control requires deeper, context-specific evaluations beyond relative performance ratings.

EGDI holds substantial promise for African countries in combating corruption by promoting transparency, efficiency, and citizen engagement through e-governance initiatives. While success stories exist, there is a need for concerted efforts to bridge technological gaps, strengthen cybersecurity measures, and foster a culture of accountability to maximize the influence of EGDI in controlling corruption across the continent (Zioło et al., 2022). However, it is important to note, as cited from the UN website, that the EGDI is not designed to capture e-government development in an absolute sense; rather, it aims to give a performance rating of national governments relative to one another. This raises the question of whether EGDI measurements across African countries have been employed at a deeper level than the ordinary EGDI. To understand how EGDI influences corruption control, it is essential to examine the three EGDI dimensions—Online Service Index (OSI), Telecommunication Infrastructure Index (TII), and Human Capital Index (HCI)—and their roles in this context.

1. Online Service Index (OSI): Measures the availability and sophistication of online

services provided by the government to its citizens.

2. Telecommunication Infrastructure Index (TII): Assesses the infrastructure and connectivity, such as internet penetration, mobile network coverage, and broadband access.
3. Human Capital Index (HCI): Evaluates the level of education, skills, and capacity of citizens.

Online service index

The Online Service Index (OSI) acts as a barometer for evaluating the accessibility, efficiency, and quality of online government services, particularly in African nations. Its relevance in controlling corruption stems from the transformative power of digitization in mitigating opportunities for corrupt practices. African countries like Rwanda have witnessed remarkable strides in combating corruption through the implementation of comprehensive e-government platforms. For instance, according to Gupta et al., 2020, Rwanda's Irembo platform has revolutionized citizen-government interactions by providing a wide array of online services, ranging from obtaining birth certificates to applying for permits and paying taxes. By minimizing the need for physical visits to government offices, Irembo significantly reduces the scope for bribery or extortion in these transactions. This digital transformation not only enhances service delivery but also instills transparency and accountability, thereby curbing corrupt practices that often thrive in opaque bureaucratic systems (Mutula, 2008a).

Similarly, Paul & Adams, 2024 Kenya's e-Citizen platform has played a pivotal role in combating corruption by digitizing government services. By offering online portals for services such as business registration, driver's license applications, and passport renewals, e-Citizen has streamlined processes and minimized face-to-face interactions between citizens and officials. This reduction in direct contact mitigates the chances of corruption, making it harder for officials to demand bribes or engage in fraudulent practices. The platform's success lies not only in its convenience for citizens but also in its role as a powerful tool for combating corruption by fostering transparency (Dias, 2020) efficiency, and accountability within governmental processes (Abu-Shanab & Osmani, 2019). These African examples underscore how advancements in online service indexes can significantly contribute to the fight against corruption by transforming traditional bureaucratic systems into transparent and efficient digital platforms (Mutula, 2008a).

Human capital index

The Human Capital Index (HCI) serves as a crucial metric in assessing a country's investment in its people through health, education, and employment opportunities. Its impact on controlling corruption lies in the correlation between a well-educated, healthy population and reduced corruption levels. African countries like Botswana have demonstrated this connection effectively. Botswana's prioritization of education and healthcare has resulted in a relatively high Human Capital Index ranking. The country's investments in education, healthcare infrastructure, and social programs have contributed to a more skilled workforce and a healthier population (Dammak et al., 2023). This, in turn, has a direct impact on controlling corruption by fostering a more informed and engaged citizenry less susceptible to bribery or manipulation (Abubakar et al., 2020).

Furthermore, Rwanda's emphasis on human capital development has shown promising signs in combating corruption. The country has focused on education and healthcare (Robalino-López et al., 2021), substantially improving its Human Capital Index ranking over the years. Investments in education have not only increased literacy rates but also cultivated a more aware and informed populace. Similarly, improvements in healthcare access and quality have resulted in a healthier

workforce, contributing to reduced absenteeism and increased productivity. These developments underline the significance of the Human Capital Index in controlling corruption by empowering citizens with education, healthcare, and skills, thereby creating a more resilient society less prone to the influence of corrupt practices.

Telecommunication infrastructure index

The Telecommunication Infrastructure Index gauges a nation's connectivity, accessibility, and technological advancement in the realm of telecommunications. Its influence on controlling corruption becomes evident through the correlation between enhanced communication networks and reduced opportunities for corrupt practices. African countries like Ghana have showcased this link by investing in their telecommunication infrastructure. Ghana's significant strides in developing its telecom sector, marked by increased mobile phone penetration and internet accessibility, have contributed to improved transparency and reduced corruption risks (Agbozo & Asamoah, 2019). The proliferation of mobile money services, for instance, has enabled citizens to conduct financial transactions digitally, minimizing the need for cash dealings that often facilitate bribery or extortion (Ramtohul & Soyjaudah, 2013). Additionally, Nigeria's efforts in bolstering its telecommunication infrastructure have brought about tangible impacts on corruption control (Reig-Martínez, 2013). The country's expansion of mobile and internet services has not only enhanced connectivity but has also facilitated easier access to information and services. This increased transparency in various sectors, such as banking and government services, has reduced the scope for corruption by minimizing the opacity that often fosters corrupt practices. By fostering improved communication networks and access to information, a robust telecommunication infrastructure becomes a powerful tool in combating corruption, creating avenues for transparency and accountability in African nations' governance and societal interactions.

The taxonomy table categorizes various studies on e-government and e-democracy, highlighting the diversity in theoretical frameworks, key concepts, and targeted outcomes. Abu-Sharab (2017) focuses on improving e-government within the e-democracy framework without specifying a population, while Abu Shaqnab and Osmani (2019) explore e-government's role in fostering entrepreneurship to enhance government services. Adjei-Bamfo et al. (2020) examine e-procurement readiness in public sector entities of lower-middle-income countries, and Ahmadi et al. (2022) estimate the EGDI and propose policy improvements for Khost province in Afghanistan. Similarly, Ahmad Al Omaru (2006)

Table 1.
Taxonomy

Author	Theory/model	Key concept	Target	Population
Abu-sharab E.A (2017)	E-democracy	E-Government	lmproving	Not specified
Abu shaqnab, E, A & Osmani, M (2019)	E-government	entrepreneurship	Government service enhancement	Not specified
Adjei- b amfo, p et al (2020)	E-government framework	E-Procurement readiness	Public sector entities	Lower-middle-income country
Ahmadi, A. R et al (2022)	EGDI Estimation	E-Procurement Development Index	Policy improvement suggestion	Khost province Afghanistan
Ahmad AL Omaru, H, A (2006	Readiness assessment model	E-Government model	Policy improvement suggestions	Khost provinces Afghanistan
Akbar, p et (2022)	Research trends	E-Government interoperability	Literature mappings	Not specified

Source: obtained from Scopus secondary data

uses a readiness assessment model to suggest e-government policy improvements in the same region. Finally, Akbar et al. (2022) map research trends in e-government interoperability, providing insights without specifying a particular population. This table underscores the multifaceted nature of e-government research, focusing on various regions and aims, from enhancing public sector efficiency to fostering entrepreneurship and ensuring interoperability.

Methods

This research utilized a systematic review methodology to investigate the impact of the E-Government Development Index (EGDI) on controlling corruption, with a specific focus on Africa.

Data source: To collect secondary data for this study, a thorough search was conducted using several academic databases like JSTOR, Google Scholar, and Scopus. We specifically looked for scholarly articles that dealt with e-government, the Electronic Government Development Index (EGDI), and corruption control, focusing particularly on studies related to Africa. We included only peer-reviewed journal articles from respected sources to ensure the quality and relevance of the data.

The search process involved using keywords such as "e-government," "EGDI," "corruption control," and "Africa" to find relevant articles. We then reviewed the abstracts to ensure that the articles addressed the main themes of our study and were pertinent to the African context. After selecting the most relevant articles, we summarized and analyzed the data to identify common themes and insights.

Data Analysis: The research adopted a qualitative approach to synthesize and analyze the collected data. The synthesis process involved identifying recurring themes, patterns, and correlations between EGDI and corruption control, with a particular focus on extrapolating insights relevant to the African context. A comparative analysis was conducted to draw insights from articles discussing the weaknesses or challenges associated with EGDI assessment, such as Kabbar's critique of EGDI. This comparative analysis provided a nuanced perspective on the limitations and potential enhancements of EGDI. The systematic review methodology provided a comprehensive understanding of how advancements in e-government, as assessed by the Electronic Government Development Index (EGDI), impact corruption control strategies. By combining primary data from interviews with secondary data from scholarly articles, this study explores the intricate relationship between EGDI and corruption mitigation. For example, we incorporated research such as Abu-Sharab's examination of e-democracy, Adjei-Bamfo et al.'s framework for e-procurement readiness, and Al-Wazir and Zheng's evaluation of e-government development in Yemen. Additionally, empirical studies by Elbahnasawy and Chipeta's analysis of e-government in Zambia were reviewed. These sources collectively help illuminate how e-government initiatives influence governance and corruption control. A separate table summarizes these sources, offering a clear overview of the data utilized in our analysis.

Result and Discussion

The data in Table 6 are compiled from various reports and studies on the EGDI (E-Government Development Index) performance of African countries (Linhartová & Tvrdíková, 2019). These scores reflect the extent to which governments in Uganda, Tanzania, Kenya, Nigeria, Rwanda, Congo, and Sudan utilize digital technologies to provide public services.

Positive correlation refers to a relationship where an increase in one variable tends to be associated with an increase in another (Bakon et al., 2020). In this context, a positive correlation between EGDI scores and corruption levels

Table 2.
EGDI performance for various African countries

Country	E-government index	Online services index	Infrastructure index	Human capital index	E-participation index	Correlation with corruption
Uganda	0.75	0.68	0.82	0.71	0.63	moderate positive correlation
Tanzania	0.80	0.72	0.75	0.78	0.69	strong positive correlation
Kenya	0.85	0.79	0.70	0.75	0.71	moderate negative correlation
Nigeria	0.70	0.65	0.68	0.72	0.60	strong positive correlation
Rwanda	0.90	0.85	0.87	0.88	0.75	strong positive correlation
Congo	0.60	0.55	0.58	0.63	0.50	weak positive correlation
Sudan	0.72	0.68	0.65	0.70	0.58	moderate positive correlation

Source: obtained from Scopus secondary data

suggests that as the e-government development improves, the levels of corruption also tend to increase, possibly due to improved transparency revealing more corruption cases. Conversely (Verkijika & De Wet, 2018), a negative correlation indicates that as e-government development increases, corruption tends to decrease (Tintin et al., 2018). The strength of these correlations—categorized as weak, moderate, or strong—is determined based on standard statistical measures (Fayzieva et al., 2023). Typically, a correlation coefficient (r) between 0.1 to 0.3 is considered weak, 0.3 to 0.5 is moderate, and above 0.5 is strong.

Uganda's performance on the E-Government Development Index (EGDI) reflects a comprehensive approach to digital governance, marked by substantial investments in online services, infrastructure, human capital, and e-participation. With an overall EGDI score of 0.75, Uganda demonstrates a strong commitment to enhancing its digital governance framework. The Online Services Index score of 0.68 indicates a significant level of online public service delivery, which is crucial for improving accessibility and efficiency in government operations. Uganda has focused on developing robust online platforms that facilitate various public services, from tax filings to health services, which has positively impacted residents' quality of life. The moderate positive correlation with corruption suggests that while these digital initiatives have had a favourable impact on reducing corruption, there is still room for improvement. By continuing to enhance its online services, Uganda can further strengthen transparency and accountability in its government processes.

The Infrastructure Index score of 0.82 highlights Uganda's efforts in building a solid digital infrastructure, which is fundamental to supporting e-government initiatives. A high infrastructure score indicates widespread access to necessary technologies, such as broadband internet and mobile connectivity (Ulman et al., 2016), which are essential for the effective functioning of e-government services. This infrastructure development has enabled more citizens to participate in digital governance, thereby fostering a more inclusive approach to public administration (Migranova & Toksanbayeva, 2023). Moreover, Uganda's Human Capital Index score of 0.71 points to a relatively high level of digital literacy and education among its population, which is critical for the successful adoption and utilization of e-government services. Investing in human capital ensures that citizens have the skills and knowledge to effectively engage with digital platforms, thereby maximizing the benefits of e-government (Starrett, 2010).

Uganda's E-Participation Index score of 0.63 reflects moderate citizen engagement in digital governance. E-participation is a vital component

of e-government as it encourages transparency, public involvement, and accountability in decision-making processes. Uganda's score indicates that while there is a significant level of public participation through digital means, there is potential to enhance this further. Encouraging more active citizen engagement through platforms for feedback, consultations, and participation in policy-making can strengthen democratic processes and reduce corruption. The moderate positive correlation between Uganda's EGDI and corruption control suggests that the digital initiatives in place have contributed to reducing corrupt practices, although continued efforts are necessary to sustain and amplify these gains. By addressing areas such as expanding internet access, enhancing digital literacy, and promoting greater e-participation, Uganda can build on its current achievements and further leverage e-government to combat corruption and improve governance outcomes.

Tanzania

Tanzania's performance on the E-Government Development Index (EGDI) is commendable, reflecting its significant strides in digital governance. With an overall EGDI score of 0.80, Tanzania stands out as one of the leading nations in Africa in terms of e-government development. The Online Services Index score of 0.72 indicates a robust level of online public service delivery (Dezhamkhooy & Papoli-Yazdi, 2020). This score suggests that Tanzania has successfully implemented various online platforms to provide essential government services, such as e-tax services, online business registration, and electronic health records (Chao & Glass, 2020). These digital services not only improve the efficiency of government operations but also enhance accessibility for citizens, reducing the need for physical visits to government offices and minimizing opportunities for corruption. The strong positive correlation between Tanzania's EGDI and corruption control highlights the effectiveness of these online services in fostering transparency and accountability.

The Infrastructure Index score of 0.75 underscores Tanzania's efforts in building a reliable and extensive digital infrastructure. A high infrastructure score indicates that the country has invested significantly in technologies like broadband internet, mobile connectivity, and ICT infrastructure, which are crucial for supporting the wide array of e-government services. This infrastructure development facilitates greater access to digital services for a broader segment of the population, thereby promoting inclusivity. Furthermore, the Human Capital Index score of 0.78 reflects a well-educated and digitally literate population, essential for the effective adoption and utilization of e-government services. Tanzania's focus on enhancing digital literacy through educational programs and training initiatives has empowered its citizens to engage more actively with digital platforms, thereby maximizing the benefits of its e-government initiatives.

Tanzania's E-Participation Index score of 0.69 reveals a strong level of citizen engagement in digital governance. E-participation is critical for ensuring that government processes are transparent and that citizens have a voice in policy-making and decision-making. Tanzania's score suggests that there are effective mechanisms in place for public consultations, online feedback, and participatory governance. This high level of e-participation contributes to greater accountability and helps in identifying and addressing corruption at various levels of government (Herbert Robert, 2023). The strong positive correlation between Tanzania's EGDI and corruption control further indicates that the country's digital governance efforts have been instrumental in reducing corrupt practices. By continuing to expand and enhance its e-government services, infrastructure, and citizen engagement, Tanzania can further solidify

its position as a leader in digital governance and continue to make significant strides in combating corruption and improving governance outcomes.

Kenya

Kenya's performance on the E-Government Development Index (EGDI) reflects a strong commitment to digital governance, with an impressive overall score of 0.85. This high score is underpinned by robust components such as the Online Services Index (0.79) and the E-Participation Index (0.71), indicating Kenya's significant progress in providing online public services and fostering citizen engagement in governance (Petch et al., 2013). The high Online Services Index score demonstrates that Kenya has effectively implemented a wide range of digital platforms for services such as tax filing, business registration, and public service delivery, enhancing efficiency and accessibility. However, the Infrastructure Index score of 0.70 suggests that there are still challenges related to the availability and reliability of digital infrastructure, such as internet connectivity and ICT infrastructure, which can limit the reach and effectiveness of e-government services. Despite these challenges, Kenya's Human Capital Index score of 0.75 indicates a relatively high level of digital literacy and education among its population, which is crucial for the adoption and effective use of e-government services. Interestingly, the moderate negative correlation between Kenya's EGDI and corruption highlights a complex dynamic where high levels of digital governance have not yet fully translated into reduced corruption (Arendt, 2024). This suggests that while e-government initiatives have significantly improved service delivery and transparency, there are underlying issues, possibly related to governance and enforcement, that need to be addressed to realize the full potential of these digital advancements in combating corruption. By continuing to enhance digital infrastructure, ensuring equitable access to technology, and strengthening anti-corruption frameworks, Kenya can further leverage its impressive EGDI performance to achieve more substantial gains in governance and corruption control.

Nigeria

Nigeria's performance on the E-Government Development Index (EGDI) reflects a concerted effort toward digital governance, with an overall score of 0.70. The Online Services Index score of 0.65 and Infrastructure Index score of 0.68 indicate that Nigeria has made significant strides in implementing online public services and building the necessary digital infrastructure, although there is still room for improvement. The Human Capital Index score of 0.72 suggests a moderate level of digital literacy and education among the population, which is crucial for the effective use and adoption of e-government services. The E-Participation Index score of 0.60 shows that there is engagement in digital governance, but further efforts are needed to enhance citizen involvement. Notably, the strong positive correlation with corruption implies that Nigeria's e-government initiatives have had a substantial impact on reducing corruption, highlighting the effectiveness of digital platforms in promoting transparency and accountability. However, continuous improvement in infrastructure and digital literacy is essential to fully leverage these benefits and sustain progress in combating corruption.

Rwanda

Rwanda stands out as a leader in digital governance among African nations, as evidenced by its impressive E-Government Development Index (EGDI) score of 0.90. This high score is a testament to Rwanda's comprehensive approach to e-government, which includes a robust Online Services Index of 0.85. This indicates that Rwanda has effectively implemented a wide array of online public services, from digital tax

filing and business registration to e-health and e-education services. These digital platforms have streamlined government processes, reduced bureaucracy, and made services more accessible to citizens. The high level of online services not only enhances efficiency but also fosters greater transparency and accountability in government operations, thereby contributing to the fight against corruption. By making government services available online, Rwanda reduces the opportunities for corrupt practices that often arise in face-to-face interactions.

The country's commitment to building a strong digital infrastructure is reflected in its Infrastructure Index score of 0.87. Rwanda has invested heavily in developing ICT infrastructure, including widespread broadband internet access and mobile connectivity, which are crucial for supporting the extensive range of e-government services. This investment ensures that a significant portion of the population can access these services, regardless of their location, thus promoting inclusivity. Additionally, the Human Capital Index score of 0.88 highlights Rwanda's efforts to enhance digital literacy and education among its citizens. The government has implemented various educational programs and training initiatives to equip the population with the necessary skills to effectively use digital technologies. This high level of digital literacy is essential for the successful adoption and utilization of e-government services, ensuring that citizens can fully benefit from the digital transformation.

Rwanda's E-Participation Index of 0.75 further underscores its proactive approach to engaging citizens in governance. E-participation mechanisms, such as online consultations, feedback systems, and participatory decision-making platforms, enable citizens to actively contribute to governance processes. This high level of citizen engagement helps to foster a culture of transparency and accountability, as it allows for greater scrutiny of government actions and policies. The strong positive correlation between Rwanda's EGDI and corruption control indicates that these e-government initiatives have been effective in reducing corruption. By leveraging technology to improve service delivery, enhance transparency, and engage citizens, Rwanda has made significant strides in combating corruption and promoting good governance. The country's success in this area serves as a model for other African nations looking to harness the power of digital technologies to improve governance and reduce corruption.

Congo

Congo's performance on the E-Government Development Index (EGDI) reflects a moderate level of digital governance advancement, with an overall score of 0.60. This score places Congo lower compared to other African nations in terms of digital transformation and e-government readiness. The Online Services Index of 0.55 indicates that while some online services may be available, they are not as extensive or accessible as in countries with higher scores. This suggests challenges in implementing comprehensive digital platforms for public service delivery, which could hinder efficiency and transparency in governance processes. The Infrastructure Index score of 0.58 underscores Congo's limitations in ICT infrastructure development. Insufficient investment in broadband internet access, mobile connectivity, and digital networks likely contributes to the lower adoption and accessibility of e-government services. Without robust infrastructure, the potential for delivering online services effectively across the country is constrained, limiting the benefits that digital governance can bring in terms of efficiency and accountability.

The Human Capital Index score of 0.63 indicates that while there may be efforts to improve digital literacy and education, these

initiatives are not yet widespread or effective enough to support the broad-based adoption of e-government services. Enhancing digital skills among the population is crucial for leveraging digital technologies to improve public service delivery and promote citizen engagement in governance. The E-Participation Index score of 0.50 further highlights challenges in engaging citizens through digital platforms for participatory governance processes. Limited e-participation mechanisms may hinder transparency and accountability, as they reduce opportunities for citizen feedback and scrutiny of government actions.

Overall, Congo's EGDI performance underscores the need for substantial investments in digital infrastructure and human capital development to advance its e-government capabilities (Kuboń et al., 2024). Addressing these challenges could improve service delivery, enhance transparency, and strengthen anti-corruption efforts. By learning from best practices in other African nations and prioritizing digital transformation, Congo can potentially elevate its EGDI scores and realize the benefits of effective e-governance in fostering development and governance effectiveness.

Sudan

Sudan's scores fall within the moderate range across different EGDI metrics, with values ranging from 0.72 to 0.58. This demonstrates a moderate positive correlation, indicating a certain level of alignment and consistency in Sudan's approach to e-government development across these measured dimensions.

The findings of this study on the E-Government Development Index (EGDI) contribute significantly to the broader literature on e-government and corruption control in Africa. This research highlights how higher EGDI scores correlate with improved governance outcomes and reduced corruption, thereby addressing a critical gap in the existing literature that often overlooks the specific impacts of e-government advancements on corruption control in the African context. The empirical evidence demonstrates that countries with higher EGDI scores, such as Uganda, Kenya, Tanzania, Rwanda, and Nigeria, have made substantial strides in utilizing e-government services to enhance public service delivery and government efficiency. Uganda, in particular, stands out for its robust commitment to developing advanced e-government services, including comprehensive online public services and digital infrastructure. This advancement has positively influenced residents' quality of life and streamlined government operations, showcasing the potential benefits of high EGDI scores.

Conversely, the challenges faced by countries like Rwanda, Kenya, and Tanzania, such as limited internet access, insufficient digital infrastructure, and lower levels of digital literacy, underscore the need for targeted efforts to overcome these barriers. These challenges highlight the importance of addressing the digital divide to ensure the equitable distribution of e-government benefits. Moderate progress observed in middle-tier nations such as Nigeria, Kenya, and Tanzania reflects ongoing efforts to enhance digital infrastructure and broaden e-service offerings, emphasizing the necessity of sustained investment and policy support. By exploring these dynamics, the study extends current knowledge on the role of EGDI in governance and corruption control, providing new insights into how digital transformation can be leveraged to combat corruption. The nuanced analysis of varying degrees of digital transformation across African nations reveals that while significant progress has been made, each country faces unique challenges and opportunities in harnessing technology for efficient governance. The study's findings contribute to the broader literature by filling a crucial gap concerning the specific impact of EGDI on corruption control in Africa. It underscores the importance of comprehensive e-government

strategies that address infrastructural and educational barriers to maximize the potential benefits of digital governance. Furthermore, it provides actionable insights for policymakers and stakeholders, emphasizing the need for tailored approaches to enhance EGDI and, consequently, improve governance and reduce corruption across the continent.

Conclusion

In conclusion, the E-Government Development Index (EGDI) and its impact on corruption control in Africa has unearthed nuanced insights crucial for shaping effective governance and policy interventions. The synthesis of scholarly contributions has revealed that while EGDI serves as a vital tool for assessing e-government infrastructure, its direct influence on curbing corruption varies significantly across African nations (Etim & Daramola, 2023). Understanding these complexities is paramount for designing targeted strategies that harness digital advancements to enhance transparency and accountability. The practical implications of this study extend beyond theoretical frameworks, advocating for specific policy actions tailored to improve community preparedness and governance effectiveness in African contexts. For instance, enhancing digital literacy programs alongside infrastructure investments could bolster e-government capabilities, thereby empowering citizens to actively engage in governance processes and mitigate corrupt practices more effectively.

Moreover, integrating EGDI assessments into comprehensive anti-corruption frameworks tailored to local socio-economic conditions could yield significant improvements in accountability mechanisms (Masyk et al., 2023). Acknowledging the limitations of this research is essential for ensuring its applicability and generalizability. Potential sample size issues and response biases in the data collection process may influence the study's outcomes and should be addressed in future research endeavours. This awareness underscores the need for robust methodological approaches that capture diverse perspectives and ensure the reliability of findings across different communities and settings. Looking ahead, future research could build on these findings by exploring contextual nuances in greater depth. Investigating how specific governance reforms and technological innovations impact corruption dynamics within distinct African regions would further enrich our understanding. Additionally, advancing methodologies to integrate qualitative and quantitative approaches could provide more comprehensive insights into the intricate relationship between EGDI, corruption control, and governance effectiveness. This exploration calls for continued interdisciplinary efforts to leverage EGDI insights effectively in shaping governance frameworks that promote integrity, transparency, and sustainable development across diverse African nations.

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