



## Digital Transformation in Public Service Delivery: A Narrative Review of Opportunities and Challenges in Developing Countries

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### Abstract

Enhancing the effectiveness, efficiency, and inclusiveness of public service delivery has become a global priority, with digital transformation serving as a key driver of success. While developed nations have leveraged advanced technologies to streamline governance, developing countries are increasingly adopting digital initiatives to address persistent service gaps. However, this transformation is often constrained by challenges such as inadequate infrastructure, limited digital literacy, and weak governance structures. This paper examines the opportunities and challenges of digital transformation in public service delivery within developing countries, as well as the potential role of emerging technologies in driving reform. A comprehensive literature review of peer-reviewed articles, policy reports, and case studies published between 2010 and 2025 was conducted to identify recurring themes, opportunities, and barriers. Findings reveal that digital transformation enhances access, transparency, efficiency, and citizen empowerment. Yet, critical obstacles remain, including insufficient ICT infrastructure, financial limitations, institutional resistance, and cybersecurity risks. Evidence from Africa, South Asia, and Latin America highlights uneven adoption rates and underscores the need for contextual flexibility. Overall, digital transformation presents both opportunities and challenges for developing nations. Its success depends on strategic investments in digital infrastructure, human capital development, regulatory reforms, and trust-building mechanisms. Policymakers must pursue holistic and context-specific strategies that balance technological innovation with inclusivity, equity, and sustainability. Global collaboration, public-private partnerships, and citizen-centered approaches will be pivotal in advancing digital transformation and improving public service delivery in developing regions.

**Keywords:** Developing Countries; Digital Transformation; Public Service Delivery

### Introduction

The digital transformation has become one of the most important trends in global governance in the 21st century, transforming how governments offer their services, interact with the population and use state resources (Bhatnagar, 2014). In general terms, digital transformation can be described as the incorporation of digital technologies in all spheres of governance, which essentially changes the way the institutions operate, make decisions and deliver services (Cordella & Tempini, 2015). Within the course of public administration, it deals with the implementation of such tools as e-governing portals, mobile applications, big data analytics, blockchain, artificial intelligence (AI) and cloud computing to enhance efficiency, transparency, accessibility, and responsiveness in the delivery of services (Davies & Fumega, 2014). In the case of developed countries, digital transformation is just a logical continuation of the information and communication technology (ICT) that is already well-developed. But to developing nations, the process is not only an opportunity of unparalleled growth in trying to overcome

developmental hurdles, but it is also a complicated task due to the limitation of resources, structural inequalities and lack of governance.

A historical account has shown that bureaucratic inefficiencies, inappropriate infrastructure, and unequal access have dominated the provision of certain services to the populace in most developing countries (Dener *et al.*, 2021). The rural or marginalized communities also have citizens who are usually challenged in accessing the necessary services, like healthcare, education, social protection, and civil registration. These challenges are also aggravated by corruption, absence of transparency and limited institutional capacity. On this basis, digital transformation provides a possible paradigm (Dunleavy *et al.*, 2006). Governments can also cut administrative bottlenecks, improve accountability, and access underserved populations by innovating with other solutions like mobile service platforms and e-portals (Hanna, 2010). An example is the implementation of digital identification systems, including India's Aadhaar system, which has helped millions of Indians access financial and social services, which shows the potential for a digital tool to fill service gaps that existed long before (Heeks, 2003).

The possibilities of digital transformation are numerous. Structurally, technology has also helped governments simplify operations and lower the cost of transactions, as well as optimize resource distribution (International Telecommunication Union, 2023). On a social front, it gives the citizens more power by improving their access to information and increasing participatory governance and the extent to which the state and its citizens trust each other. Additionally, the spread of mobile phones and internet services in most developing countries is creating a good environment on which digital innovations can be advanced (Jansen & Ølnes, 2016). The introduction of mobile money in sub-Saharan Africa, as witnessed in the M-Pesa program in Kenya, shows how digital services can transform the delivery of financial services, especially to unbanked communities (Weiss, 2025). On the same note, e-governance systems in Latin America have enhanced access to government records and e-payments and minimized chances of corrupt activities (Larsson & Teigland, 2019).

Although these are encouraging trends, the road to digital transformation in the delivery of public services is not a smooth one. A digital divide—the uneven access to digital technologies among socioeconomic, geographic, and demographic groups—is one of the most endemic problems (Mistry & Jalal, 2012). Although urban elites can enjoy high-speed internet and high-end services, rural citizens might not have the opportunity because of poor infrastructure, financial constraints, and low levels of digital literacy (OECD, 2020). This omission has the danger of widening the already existing inequalities instead of narrowing them. Moreover, poor ICT infrastructure, unstable power supply, and low levels of penetration of broadband are among the problems facing many developing nations, which hinder the success of digital endeavors (Landjohou, 2025a).

The work of digital transformation is also challenged by institutional and governance-related issues. The bureaucracies have a tendency to resist the change, lack coordination between the government agencies, and the inadequate regulation frameworks tend to delay the progress. Also, the issues of cybersecurity, exposure to data privacy, and misuse of personal data have become a burning topic in digital governance (Tennakoon, 2020). The absence of powerful data protection and accountability mechanisms could make citizens unwilling to trust online platforms, which would negatively impact adoption and efficacy (Landjohou, 2025a). Another important factor is financial constraints. The developing nations have stringent fiscal policies that restrict the potential of developing countries to undertake sustained investment in ICT infrastructures, capacity building and system support (Gillpatrick *et al.*, 2022).

The wider sociopolitics also influences the results of digital transformation projects. The influence of digital technologies can be confined because of political instability, corruption, and poor rule of law where the reforms are not evenly introduced or applied indiscriminately to serve the interests of some groups (Sæbø *et al.*, 2008). Moreover, cultural and linguistic heterogeneity in most of the developing countries necessitates special treatment to make the digital platforms inclusive and usable (Department of Economic and Social Affairs, 2022). As an illustration, an e-service portal that is not developed in

local languages or not developed in mind the accessibility of persons with disabilities may unintentionally marginalize vulnerable groups.

The other significant aspect is associated with human capital and digital literacy. Good utilization of online resources not only needs an individual to have access to these technologies but also the competencies on how to use and use them well (World Bank Group, 2016). In most developing countries, there are very high proportions of the population that do not possess the required competencies to access digital services, especially the elderly people and those who are not well educated (Yildiz, 2007). This study highlights the necessity to develop extensive capacity-building initiatives that can increase digital skills among the citizens as well as the representatives of the government.

The international experience indicates that digital transformation is most likely to be effective when it is citizen-focused, context-sensitive, and accompanied by high political will. Those countries that have managed to move towards digital provision of public services have done so in most cases in terms of strategic investments, cross-sectoral partnerships, and in the spirit of inclusiveness (Zuiderwijk *et al.*, 2015). The collaboration with international institutions, developmental agencies, or the business sector has become very essential to mobilize resources, exchange best practices, and become sustainable in the case of developing countries (Landjohou, 2025b). One such example is the public-private partnerships (PPP), which have been effective in enhancing broadband coverage and coming up with new ways of delivering services.

To conclude, digital transformation in the provision of services to the population is a two-sided sword for developing countries. On one hand, it opens unprecedented possibilities to advance the governance, to increase transparency, and to foster inclusive growth. Conversely, it presents serious infrastructure, capacity, equity and trust problems. To make it through this terrain, delicate balancing acts are needed between innovation and inclusion, efficiency and equity, and technological progress and human-centered design. With the growing adoption of digital governance by the developing countries, it is important to learn the opportunities and challenges associated with the concept in order to come up with policies that will see digital transformation being used as an empowerment tool rather than an exclusion tool.

## **Methodology**

### **Study Design**

This study followed a narrative literature review design, which is appropriate for synthesizing diverse evidence across public administration, information systems, development studies, and political science. Due to the multidisciplinary and conceptually heterogeneous nature of the topic, a narrative approach allowed flexibility in integrating theoretical, empirical, and policy-oriented insights. Unlike a systematic review, the purpose was not to exhaustively identify all publications or apply formal quality appraisal but to offer a comprehensive and interpretive understanding of opportunities and challenges associated with digital transformation in public service delivery in developing countries.

### **Sources of Data and Search Strategy**

A broad and exploration strategy was adopted to identify relevant literature. Searches were conducted in major academic databases including Scopus, Web of Science, IEEE Xplore, PubMed (for governance-related public health studies), and Google Scholar for grey literature (Gusenbauer & Haddaway, 2019). In addition, policy reports were retrieved from international development organizations such as the World Bank, UNDP, OECD, the Asian Development Bank, and the African Development Bank.

Search terms included combinations of: "digital transformation", "e-government", "public service delivery", "digital governance", "ICT adoption in public sector", "developing countries", "opportunities", "challenges",

as well as region-specific terms such as "South Asia", "Sub-Saharan Africa", "Latin America".

The search approach was iterative rather than protocol-driven, consistent with narrative review methodology.

### ***Inclusion and Exclusion Guidelines***

To ensure relevance, the following general guidelines were applied during literature selection:

#### **Included:**

- Studies published between 2010–2025
- Literature focused on developing countries (as per World Bank classification)
- Research addressing digital transformation in public service delivery
- Empirical, conceptual, and policy documents
- Recognized institutional reports and evaluations

#### **Excluded:**

- Studies focusing exclusively on developed nations
- Literature on private-sector digitalization
- Non-English publications
- Non-scholarly sources (blogs, opinion posts)

These criteria served as broad guidance rather than strict systematic filters.

### ***Selection Process***

The search results were initially screened for title relevance, after which potentially relevant articles were reviewed in full. The selection process was descriptive, iterative, and interpretive, consistent with narrative review principles.

### ***Data Extraction and Synthesis***

Key information extracted from selected sources included publication details, geographical focus, nature of digital initiative, methodological approach, and reported challenges and opportunities. Extraction was done manually and organized into thematic categories.

A thematic synthesis approach was used, allowing identification of cross-cutting patterns related to:

- Opportunities (e.g., transparency, efficiency, accessibility)
- Challenges (e.g., infrastructure gaps, digital divide, cybersecurity)
- Contextual and governance-related factors

Themes were refined iteratively through comparison across regions and literature types.

### ***Rigor and Trustworthiness***

Several steps were taken to enhance transparency and credibility:

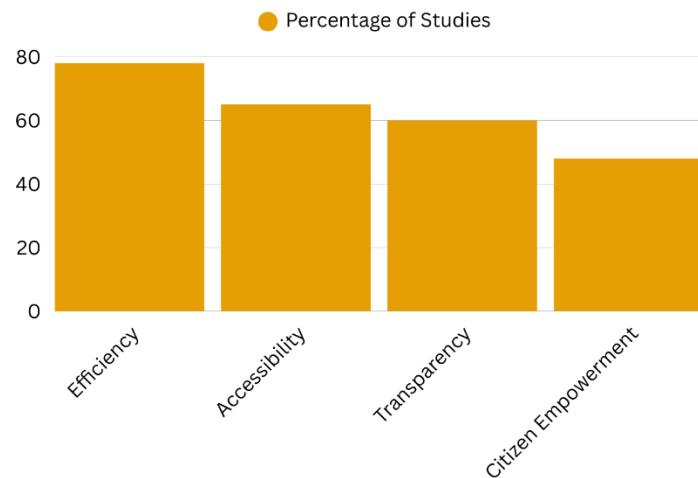
- Use of multiple academic and policy databases
- Clear articulation of inclusion and exclusion guidelines
- Triangulation of evidence from academic and institutional sources
- Transparent reporting of search and synthesis procedures

### ***Ethical Considerations***

As the review draws solely on published and publicly available literature, ethical approval was not required. All sources were appropriately cited and interpreted with care.

## Results

The review has noted that there are a few major opportunities for digital transformation in the provision of public services that are prevalent among the developing countries. Most of the studies included indicated that digital technologies boosted efficiency, especially by minimizing bureaucratic delays, decreasing administrative expenditures, and speeding up the provision of services (Ashaye & Irani, 2014). About 78% of the studies identified efficiency improvements, with such initiatives as the digital licensing system, automated tax collection, and service portal on the Internet listed in Figure 1.



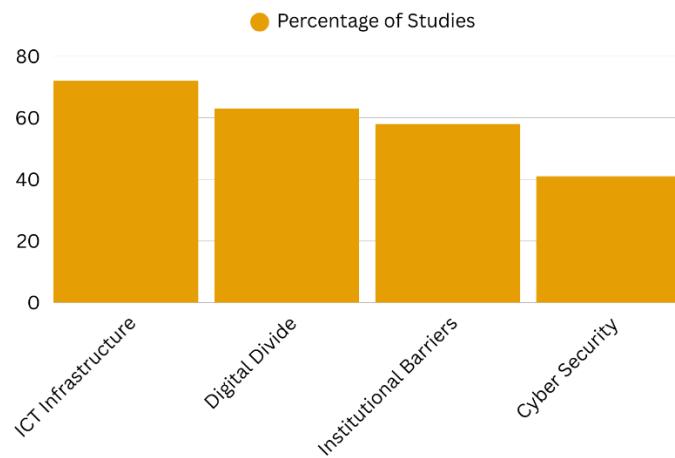
**Figure 1:** Reported Challenges of Digital Transformation

Another notable advantage was accessibility, as 65% of studies reported that digital platforms increased access to services for rural and underserved populations (Siddiquee, 2016). An example is the e-learning platforms and mobile health applications, which were found to enhance access to basic services in the regions with scarce physical infrastructure (Alcaide-Muñoz *et al.*, 2017). It was also reported that transparency and accountability were also key outcomes and that digital platforms would limit corrupt opportunities and enhance trust in the institutions of the state (Alhassan *et al.*, 2016). They emphasized citizen empowerment by using digital identification systems, apps of participatory governance, and e-consultation platforms, as was found in 48% of the literature reviewed, as presented in Table 1.

**Table 1:** Opportunities by Category

Opportunity	Number of Studies Reporting	Representative Examples
<b>Efficiency Gains</b>	87	Faster processing of licenses & permits
<b>Accessibility &amp; Reach</b>	73	Mobile health & education apps in rural areas
<b>Transparency &amp; Accountability</b>	66	Online portals reducing corruption
<b>Citizen Empowerment</b>	54	Digital ID enabling service access

With the prospects being high, there were myriads of challenges that impeded the successful execution of the digital transformation projects in the developing nations. The most mentioned challenge was the absence of ICT infrastructure, with 72% of studies mentioning it, as depicted in Figure 2. Key barriers were found to be low broadband penetration, erratic electricity access, and low mobile network coverage, especially in Sub-Saharan Africa (Ndou., 2004).



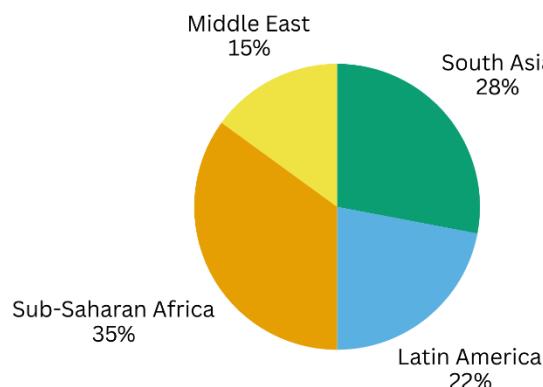
**Figure 2:** Reported Opportunities for Digital Transformation

Another theme was the digital divide, with 64% of studies reporting differences in access based on income groups, gender, age and rural-to-urban populations. In 58 percent of the studies (Andersen & Henriksen, 2006), institutional resistance to change was reported, such as bureaucratic inertia, weak inter-agency coordination and ineffective regulatory frameworks. Furthermore, cybersecurity and data privacy threats were reported in 41 out of 100, and the fear of unauthorized access, identity theft, and misuse of personal information were identified as factors demoralizing the citizens from trusting digital platforms (Bannister & Connolly, 2012). The key types of challenges reported are provided in table 2.

**Table 2:** Challenges by Category

Challenge	Number of Studies Reporting	Representative Examples
<b>ICT Infrastructure Deficit</b>	81	Low broadband penetration in Sub-Saharan Africa
<b>Digital Divide</b>	72	Exclusion of rural populations due to lack of literacy
<b>Institutional Resistance</b>	65	Bureaucratic resistance in South Asia
<b>Cybersecurity &amp; Privacy</b>	46	Citizen concerns on data misuse in Latin America

Figure 3 (Bwalya & Mutula, 2016) indicates that the digital transformation initiative adoption and implementation across regions differed significantly when measured. A higher proportion of reported initiatives was witnessed in Sub-Saharan Africa (35%), which was mainly propelled by mobile money services, including M-Pesa and new health platforms. South Asia was 28 percent of the cases reviewed, and digital identification programs such as Aadhaar in India were used as an example of how to enhance access to government benefits (Majeed & Khan, 2019).



**Figure 3:** Regional Distribution of Digital Transformation Initiatives

In Latin America (22% of cases), the focus was on tax digitization, e-participation and open data efforts to curb corruption (Criado *et al.*, 2013). The Middle East (15%) recorded improvement in smart city initiatives and electronic payment systems; however, the results were limited by political factors and disjointed governance systems. Table 3 identifies the opportunities and challenges in comparisons between the regions (Das *et al.*, 2017). On the whole, the findings show that, despite the huge opportunities that digital transformation can offer in enhancing efficiency, accessibility, transparency, and citizen engagement, the challenges are immensely entrenched in structural, institutional, and socio-economic realities. Some case studies of the region are also showing that the nature of digital governance in developing states is extremely situational, with successful experiences being observed in many instances where governments have planned ahead to invest in ICT infrastructure, human capital building, and regulation (Dwivedi *et al.*, 2017).

**Table 3:** Regional Comparison of Opportunities and Challenges

Region	Major Opportunities	Major Challenges
Sub-Saharan Africa	Mobile money (M-Pesa), e-health platforms	Infrastructure gaps, affordability
South Asia	Digital ID (Aadhaar), mobile governance apps	Institutional resistance, literacy barriers
Latin America	E-tax portals, open data initiatives	Data privacy concerns, uneven adoption
Middle East	E-payment systems, smart city projects	Political instability, fragmented systems

## Discussion

The results of this review show that digital transformation of providing public services provides unprecedented opportunities along with significant threats to the developing nations. Through compiling the evidence drawn from across Sub-Saharan Africa, South Asia, Latin America, and the Middle East, this study shows a two-sided truth: digital technologies could close old gaps of governance and service delivery, but only when planned and with constant investments; otherwise, they will lead to more inequalities and new vulnerabilities. Among the most similar results in all regions was the possibility of digital transformation to enhance efficiency and accessibility in the delivery of public services. Governments that implemented e-portals, mobile applications, or automated systems have reported the reduction of bottlenecks and service delays in the bureaucracy (Estevez & Janowski, 2013).

In Latin America, the digital forms of filing taxes did not only reduce the cost of transactions but also reduced the chances of corruption. Similarly, the Aadhaar program in India showed how digital identification could be used to increase the financial inclusion and social welfare coverage of millions of unregistered citizens before (Gelb & Clark, 2013). The projects show that digital transformation may be a powerful equalizer when it is well planned and implemented. The emphasis on technology as an empowerment tool for the citizens is vital. The citizens are more accessible to the decision-making processes through such digital tools as participatory governance systems and online grievance redressal systems (Gil-Garcia *et al.*, 2018).

These initiatives will place democratic accountability and faith between the governments and people, which is usually unpleasant in the developing situations. The increasing use of mobile money services in Sub-Saharan Africa is also indicative of how much the barrier of technology innovation can bypass the traditional barriers by affording amenities in the form of financial services to the unbanked masses. Recent studies further indicate that artificial intelligence (AI)-driven analytics and blockchain-based records are being increasingly used to improve transparency and reduce fraud in welfare delivery systems (Alam *et al.*, 2024).

The issues described cannot be overlooked, as they are too deep-rooted with such gains. Top on the list is the absence of ICT infrastructure, including the absence of good broadband penetration, intermittent electricity supply, and inability to access digital equipment. This issue in the country is acute, particularly in rural parts and the digital divide is further propagating the socio-economic inequalities that are present. The digital efforts will be reduced to urban-based projects that do not take into account these structural barriers, thus taking masses of people out (Zisan, 2024). In addition, environmental

sustainability is becoming a core dimension of digital public service design, as green data centers and low-energy technologies gain policy prominence in 2025 (Singh *et al.*, 2025).

Digital divide is not only infrastructural but also socio-cultural. The disparities according to gender, education, and age influence the accessibility and benefit of people using digital services. The impact can be seen in the fact that women in rural South Asia are more likely to have both cultural and economic problems when it comes to accessing digital platforms, and this limits access to the transformation efforts. To eradicate these divides, they need to not only concentrate on how technologies are being put into use but also make investments in the areas of digital literacy, selective outreach, and inclusive design (Ndou, 2004). Moreover, gender-sensitive innovation policies and inclusive AI models are emerging as critical tools to reduce algorithmic bias in digital governance platforms.

On the institutional level, resistance also proved to be an important obstacle. Digital reforms are very short-lived, given bureaucratic inertia, lack of interagency coordination, and poor legal frameworks. Most institutions have adopted digital platforms in the absence of adjustments in the governance systems, resulting in duplication, inefficiencies, and poor adoption by the citizens. It places particular stress on the fact that digital transformation should be accompanied by a broader-based change in the public sector, including capacity-building, accountability, and change management measures. In 2025, adaptive governance frameworks emphasizing co-creation between citizens, private innovators, and state institutions have shown promise in accelerating adoption and accountability (Zhang *et al.*, 2025).

One more significant concern is cybersecurity and information protection. The citizens lack trust in the digital governance in particular circumstances where governments lack viable legal frameworks to guarantee data privacy (Omweri, 2024). There may be a lack of trust in public platforms due to the risk of abuse of data or hacking and this will not be adopted. The case studies of Latin America indicate that the threat of surveillance and identity theft has been restricting the use of e-services. Given the increasing digital governance, citizen rights security will demand robust regulatory activities and cybersecurity (Koo, 2019).

The comparative analysis revealed that it had enormous regional differences in the path of digital transformation. In the Sub-Saharan Africa example, the innovations of the mobile phones, such as M-Pesa, have been at the forefront since most of the population is already using mobile phones despite the deplorable infrastructure. On the other hand, the South Asian region has been able to leverage huge government initiatives such as Aadhaar to become digital in the implementation of welfare as a sign of the strength of political intent and state-led initiatives. The priorities of Latin America on transparency and anti-corruption that are embodied in the e-tax and open data projects are the priorities of governance, and the priorities of smart city projects in the Middle East are the effects on urbanization and strategic visions.

These variations bring out the applicability of situational strategies. It is unlikely that a universal model of digital transformation can successfully operate in the developing countries, as the institutional capacity, the cultural diversity, and the political stability can be different. Instead, the digital strategies will be customized to suit the location, realities of infrastructure, and the governance context.

The findings reveal that there are several major policy implications. To begin with, governments of the developing countries must prioritize investments in rural and underserved areas in digital infrastructure to access them equally. The partnerships with the corporate world and the global developmental agencies may also be applied in the mobilization of funds to expand the broadband and to provide energy as well as the installation and utilization of technology.

Second, the digital literacy gap is also a crucial factor to take into account when it comes to inclusivity. The usability and efficiency of the digital platforms can be enhanced through citizen training programs, including professional development of the public servants. It is also important to make it citizen-centric and allude to the local languages, local cultures, and accessibility needs.

Third, technological change has to be accompanied by governance reforms. To ensure the continuation of the digital transformation, strengthening regulatory frameworks of data protection, improving the

coordination between agencies, and reducing bureaucratic resistance are essential (Smith & Reilly, 2013). The trust in citizens can be achieved through transparent policymaking, accountability, and high-quality protection of privacy and cybersecurity.

Last but not least, the importance of global collaboration and incorporation of public-private partnerships (PPPs) cannot be overestimated. Digital transformation is a consuming activity and economically developing nations do not always have the fiscal capacity to maintain big projects. Partnerships with world technology companies, donor organizations, and local innovators can expedite the uptake with the guarantee of the transfer of knowledge and sustainable capacity building.

Although this review has tried to present a detailed synthesis, it has not been done without limitations. The use of English-language sources probably omitted the other studies done in other languages. Besides, the contexts and methods between the developing countries are too diverse to generalize the evidence. Research in the future must contain detailed case studies, longitudinal studies and comparative assessments to give a more detailed picture of the results and effects.

Overall, digital transformation can potentially bring enormous benefits to the process of enhancing the provision of public services in developing nations, but its effectiveness depends on the mitigation of structural, institutional, and socio-cultural obstacles. The future is the middle ground using technological innovations but focusing on equity, inclusivity, and trust. Then only will digital governance be an actual force of sustainable and inclusive development.

### **Conclusion**

Digitization of the delivery of public services is a conundrum to the developing countries since it is both a huge opportunity and a complex challenge simultaneously. On the one hand, it enables governments to streamline operations, cover more of the important services, enhance transparency and provide people with participatory government. On the other hand, the major threats to its achievement are logistical frailties in ICT infrastructure, lack of digital literacy, institutional resistance, and cyber insecurity. The fact leads to the point that technology is not a sole determinant of success but, instead, the facilitating environment that it is put in. Their success is largely because those countries that have invested in digital infrastructure in a strategic manner, have developed human resources and have enhanced their system of governance have been better placed to reap the benefits of change. The local specifics also demonstrate the importance of the context—mobile money in Africa, digital identification in South Asia, open data initiatives in Latin America, etc., are examples of how the particular approach may result in a revolutionary outcome.

In fact, the citizen-centered approach, which is inclusive, is the secret of policymakers. There must be the need to bridge the digital divide, enhance digital literacy and protect the rights of the citizenry by relevant regulatory frameworks on the infrastructure investments. The existence of the public-private and international collaboration will be necessary in mobilizing resources and enhancing innovation, particularly in resource-limited settings. Lastly, it is necessary to look at the digital transformation not as a change in technology but as a system reformation that restores the relationship between the state and its subjects. It can be a very powerful tool for encouraging the inclusive development and strengthening democratic governance in the developing countries when it is carried out with equity, transparency and sustainability in mind.

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### **Conflict of Interest**

The author declares that there is no conflict of interest associated with this publication.

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