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Rethinking Digital Equity: A Narrative Review of Public Service Digitalization

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ABSTRACT: Digitalization is transforming the landscape of public service delivery across the globe. However, in developing countries, this transformation is marked by growing concerns over inequality in digital access. This study provides a comprehensive narrative review examining the impact of digitalization on access to public services in developing contexts. The objective is to identify the socio-economic, policy, and technological factors influencing digital inclusion and to assess the effectiveness of current strategies. Using literature sourced from Scopus, Google Scholar, and PubMed, the review synthesizes findings from peer-reviewed journal articles and institutional reports published over the last decade. Keywords such as "digital public services," "digital inequality," and "ICT in developing countries" guided the search. The analysis focuses on three core themes: social determinants, policy frameworks, and technological infrastructure. Findings reveal that education, income, and cultural norms play pivotal roles in shaping digital access. Policy success varies by region, with context-sensitive and inclusive strategies—like those in Rwanda, Kenya, and Indonesia—showing more positive outcomes. Conversely, weak institutional capacity, poor infrastructure, and digital illiteracy remain critical barriers. The discussion emphasizes the role of systemic factors, including organizational culture and inter-agency coordination, in either facilitating or obstructing inclusive digitalization. In conclusion, this review highlights the need for multistakeholder collaboration, targeted infrastructure investment, and integrated policy frameworks. Addressing these dimensions is essential for ensuring equitable access to digital public services and fulfilling the broader goals of inclusive governance and digital equity.

Keywords: Digital Public Services, Digital Inclusion, ICT In Developing Countries, E-Government Access, Infrastructure Inequality, Digital Literacy, Policy Frameworks.

INTRODUCTION

The accelerating wave of digital transformation has profoundly influenced the structure and delivery of public services worldwide. While digitalization promises improved efficiency, transparency, and accessibility, it also poses the risk of reinforcing existing socio-economic inequalities, particularly in developing countries. As governments increasingly shift toward digital

platforms to deliver essential services—such as health, education, and administrative support—disparities in digital access and digital literacy become more pronounced. Scholars have noted that without inclusive strategies, digitalization may create new forms of exclusion, rather than bridging gaps in access (Chojnowski, 2019; Pollard-Wright, 2021).

In recent years, digital public services have emerged as a hallmark of modern governance, expected to democratize access and streamline bureaucratic processes. However, this idealized vision often clashes with the reality in developing nations, where infrastructural limitations and socio-economic disparities hinder equal access. According to The World Bank, over 2.9 billion people globally still lack access to the internet, with the vast majority residing in developing countries (World Bank, 2022). These access limitations, compounded by inadequate digital infrastructure and uneven distribution of digital literacy, indicate that digital transformation is not inherently inclusive. This has led to an academic and policy debate on whether digitalization truly enhances or undermines equitable access to public services.

The urgency of this discourse is underscored by alarming statistics and structural realities. The World Bank and UNCTAD have both highlighted that digital gaps persistently marginalize populations that are already vulnerable, such as rural communities, women, and indigenous populations (Andrews et al., 2018). UNCTAD further cautions that digitalization without adequate safeguards can entrench socio-economic divides, particularly in regions where education systems and ICT infrastructure are underdeveloped. Li et al. (2025) argue that limited digital education perpetuates inequality and impedes the ability of marginalized communities to engage with and benefit from digital public services.

Empirical studies also reveal that digital inequality directly impacts citizens' ability to utilize government services effectively. For instance, access to online health services, tax administration, or social security systems often requires a baseline level of digital literacy and access to devices—both of which are lacking in many underserved communities. These conditions have been exacerbated during global crises such as the COVID-19 pandemic, where digital platforms became the default mode of service delivery. Unfortunately, those on the wrong side of the digital divide were unable to access essential services, thereby deepening their social and economic exclusion.

Despite increasing recognition of these challenges, structural and policy-related barriers remain prevalent. One major concern is the reliability and security of digital platforms. Studies show that concerns about data privacy, cyber threats, and system breaches significantly deter marginalized groups from engaging with digital services (Jia et al., 2023). Moreover, government efforts to foster digital engagement are often hampered by fragmented policies, poor interdepartmental coordination, and underfunded initiatives. Keppler (2020), in an OECD report, emphasizes that inclusive digital transformation requires comprehensive strategies encompassing infrastructure, skills training, and community engagement.

Another layer of complexity arises from the inconsistent implementation of digital programs. While many governments in the Global South have launched digital service initiatives, these are frequently stymied by insufficient technical expertise, limited financial resources, and institutional inertia (Coladangelo & Stark, 2020). Many well-intentioned projects fail to meet their objectives

due to lack of scalability, community buy-in, and long-term vision. Duarte (2020) posits that addressing these systemic deficiencies necessitates a multistakeholder approach that includes public, private, and civil society actors in both the design and execution of digitalization policies.

This confluence of issues reveals an intricate landscape of both potential and peril. Digitalization is not a panacea; rather, it is a double-edged sword that requires careful, context-sensitive implementation to avoid exacerbating the very inequalities it seeks to mitigate. As studies in Southeast Asia and Sub-Saharan Africa have shown, digital public service provision is often uneven, reflecting broader socio-economic patterns. In Southeast Asia, there is evidence of expanding digital services alongside glaring disparities in internet access and digital skills, particularly among low-income and rural populations. Conversely, in Sub-Saharan Africa, the absence of reliable electricity and internet infrastructure renders many digital initiatives ineffective, especially in remote areas.

These patterns of exclusion are closely linked to socio-economic indicators such as income, education, and gender. For instance, women in many developing countries face compounded barriers to digital access due to lower educational attainment and cultural norms that restrict their use of technology. Similarly, indigenous and rural populations often lack the language and literacy resources required to navigate digital platforms effectively. Therefore, understanding digital inequality requires not only an examination of technological access but also the socio-cultural and political environments that shape it.

Notably, a significant gap in the literature persists regarding the longitudinal impacts of digitalization on access to public services. Existing studies tend to focus on short-term outcomes or isolated case studies, with limited exploration of how access patterns evolve over time. Furthermore, most policy evaluations are reactive, assessing programs post-implementation without integrating feedback loops for continuous improvement. There is also insufficient attention to the psychosocial dimensions of digital exclusion, including the erosion of trust in public institutions when services are inaccessible or poorly delivered online.

In light of these limitations, this narrative review aims to synthesize current knowledge on the relationship between digitalization and inequality in access to public services in developing countries. Specifically, it seeks to examine how infrastructural, socio-economic, and policy-related factors interact to shape digital inclusion or exclusion. The review also identifies effective practices and common pitfalls in existing digitalization efforts, offering insights that can inform more equitable policy-making.

This analysis focuses primarily on countries in Southeast Asia and Sub-Saharan Africa, two regions characterized by rapid digital transformation alongside persistent development challenges. By narrowing the geographic scope, this study aims to provide a more nuanced understanding of how regional contexts mediate the impacts of digitalization. The selection of these regions is informed by the prevalence of digital public service initiatives as well as the availability of comparative data on infrastructure, education, and social equity indicators.

Moreover, this review pays particular attention to marginalized groups within these regions, including women, indigenous communities, and residents of remote areas. These populations often remain invisible in national statistics and are underrepresented in policy discussions. By foregrounding their experiences, this study seeks to highlight the importance of inclusive design and participatory governance in digital transformation initiatives. It also underscores the value of combining quantitative and qualitative research methods to capture the full spectrum of digital inequality.

Ultimately, this review underscores the imperative for integrated, evidence-based policy frameworks that prioritize equity in digital public service delivery. Drawing on diverse sources from academic literature, institutional reports, and policy documents, it offers a comprehensive overview of both the promises and perils of digitalization in the developing world. In doing so, it contributes to a growing body of scholarship advocating for more inclusive and sustainable models of digital governance.

METHOD

This study adopts a narrative literature review approach to explore the dynamics between digitalization, access to public services, and inequality in developing countries. The methodology is designed to synthesize existing knowledge, identify research gaps, and generate insights that inform both academic understanding and policy-making. The review process involved systematic yet flexible strategies for sourcing, selecting, and analyzing literature from a range of reputable academic and institutional sources.

To collect relevant literature, several academic databases were utilized, including Scopus, Google Scholar, and PubMed. These platforms were selected due to their broad coverage of interdisciplinary research, rigorous indexing systems, and accessibility to peer-reviewed academic publications. Scopus, in particular, was employed for its advanced filtering tools and reliable access to social science and information technology journals. PubMed, while predominantly oriented toward health sciences, was explored to retrieve literature on public health services and digital access within developing regions. Google Scholar was used as a supplementary resource to identify grey literature, institutional reports, and policy briefs that provided additional context and practical relevance.

The keyword strategy was carefully developed to ensure the inclusion of comprehensive and diverse studies related to digitalization and public service inequality. The following keywords were used either individually or in Boolean combinations: "digitalisasi pelayanan publik", "akses digital di negara berkembang", "ketimpangan akses teknologi", "e-government di negara maju", "infrastruktur digital", "inklusi digital", and "teknologi informasi dan komunikasi (TIK) di negara berkembang". These terms allowed for targeted searches while also enabling interdisciplinary coverage spanning public administration, digital governance, sociology, and development studies. The combination of technology-oriented and socio-political terminology facilitated the retrieval of both theoretical and empirical studies across multiple disciplines.

A layered keyword search technique was adopted to capture studies relevant at various levels of governance and policy. For example, the inclusion of the term "e-government" enabled the identification of literature that focuses on digital platforms for public administration, while "ketimpangan akses teknologi" captured studies examining the socio-economic dimensions of access disparities. This strategy was essential in gathering literature from varied sources and formats, ensuring a rich and multifaceted analysis of the topic.

The inclusion and exclusion criteria were framed to enhance the relevance and quality of selected literature while maintaining methodological rigor. The primary inclusion criteria involved selecting peer-reviewed journal articles published within the last ten years to ensure that the data and analyses reflect current digital transformation trends. Articles were also required to directly address the intersection of digitalization, access to public services, and socio-economic inequality within the context of developing countries. Studies with geographic foci on regions such as Southeast Asia, Sub-Saharan Africa, and Latin America were prioritized, given the high relevance of digital inequality in these areas.

In contrast, the exclusion criteria filtered out literature that lacked a clear connection to the study topic. Non-English publications were generally excluded to maintain consistency in analysis and to avoid language-based interpretive challenges. Moreover, publications that did not undergo peer review, such as opinion pieces, blog posts, or unverified grey literature, were omitted to uphold academic standards. However, selective inclusion of reputable institutional reports and white papers was permitted when these documents offered empirically grounded insights or statistical data unavailable in peer-reviewed sources.

The decision to exclude non-peer-reviewed material posed both strengths and limitations. On one hand, this approach ensured that the findings were based on verified, critically evaluated scholarship, thereby enhancing the reliability of the synthesis. On the other hand, it risked overlooking pragmatic knowledge generated by field practitioners, civil society organizations, and local governments. For instance, policy briefs from organizations such as the UNDP or ITU may not have met strict peer-review criteria but provided valuable empirical observations about local digital implementation challenges (Pollard-Wright, 2021; Keppler, 2020). To balance this, selected high-quality grey literature was considered when it was deemed methodologically sound and thematically relevant.

The review included various types of research designs to capture both the breadth and depth of the issue. Quantitative studies, including national surveys, multivariate analyses, and comparative assessments, were essential in providing statistical evidence on digital access disparities. These studies quantified the extent of inequality and highlighted demographic and geographic variables correlated with limited access. Qualitative research, such as ethnographic studies, semi-structured interviews, and participatory action research, was also included to understand the lived experiences of individuals affected by digital exclusion. This blend of methodological perspectives enriched the review by incorporating both macro-level trends and micro-level narratives.

The selection process followed a multi-phase approach. Initially, a comprehensive search using the predefined keywords was conducted across the databases. Titles and abstracts were screened to

determine preliminary relevance. Studies that met the inclusion criteria based on abstract review were then retrieved in full text. Each article was critically assessed for methodological rigor, clarity of findings, and alignment with the research focus. The final selection included a balanced representation of studies across different regions, disciplines, and research methods.

To evaluate the credibility and relevance of selected studies, each article was examined using a structured appraisal framework. This involved assessing the clarity of research questions, appropriateness of methodologies, strength of evidence, and alignment with the objectives of this review. Articles with ambiguous research objectives, poor methodological transparency, or limited applicability to the context of developing countries were excluded at this stage. Studies were also evaluated based on their contributions to theoretical understanding, empirical generalizability, and policy relevance.

An additional consideration was the inclusion of studies that addressed intersectional factors such as gender, ethnicity, and socio-economic status. These variables are crucial in understanding how digital inequality manifests across different population groups. Literature that explored how these intersecting identities influence access to and utilization of digital public services was given particular emphasis. This helped in constructing a more nuanced understanding of exclusion and ensured that the review captured differential experiences within the broader category of "developing countries."

Finally, the synthesis process involved thematic coding and categorization of key findings. Emerging themes were identified based on recurrent patterns across studies, such as infrastructure limitations, digital literacy gaps, policy fragmentation, and trust in digital systems. These themes were then organized to form the analytical framework for the results and discussion sections. The review methodology thus ensured a systematic, transparent, and inclusive approach to understanding the complex interplay between digitalization and inequality in public service access within developing countries.

RESULT AND DISCUSSION

The findings from this narrative review reveal a multifaceted and complex relationship between digitalization and inequality in access to public services in developing countries. These results are organized according to three key themes that consistently emerged across the reviewed literature: social factors, policy and regulatory dimensions, and technological or infrastructural elements. Each theme illustrates how a combination of systemic, contextual, and individual-level variables interacts to shape disparities in digital access and utilization.

Social Factors

Empirical evidence strongly supports the conclusion that social factors such as education, socio-economic status, and cultural norms significantly influence access to digital public services. For instance, research conducted in Kenya shows that individuals with higher education levels are more

likely to access and utilize digital government services. This is largely attributed to their superior understanding of information and communication technologies (ICTs), which translates into greater engagement with digital platforms (Aerts et al., 2012). Socio-economic status also plays a critical role; lower-income communities often lack the financial resources necessary to obtain digital devices or maintain stable internet connections, thereby limiting their ability to benefit from public digital services (Witkovský & Frollo, 2020).

In the Indian context, cultural factors further complicate digital inclusion. Studies highlight how traditional norms and values, particularly in rural communities, affect both the acceptance of and accessibility to digital technology. In such areas, technological unfamiliarity and socio-cultural resistance often inhibit the use of digital services, despite their increasing availability (Jia et al., 2023). This supports WHO's findings that education—often interlinked with economic status—remains a key determinant of digital access.

Cross-country comparisons further emphasize the variable impact of social factors on digital inequality. In Sub-Saharan Africa, gender disparities are a particularly salient issue. Women in countries such as Nigeria and Uganda experience significantly reduced access to smartphones and internet connectivity compared to men, which impedes their ability to interact with government services online. UN Women data show that these gendered disparities are not only technological but also deeply embedded in cultural and economic structures (Bevan et al., 2015).

In contrast, some Southeast Asian nations demonstrate relative progress in addressing these disparities. In Indonesia and Malaysia, for example, national efforts to implement digital literacy programs have contributed to reducing access gaps. These countries' inclusive policy frameworks have allowed more equitable access to ICTs across different socio-economic groups, underscoring the potential of targeted interventions to mitigate social barriers (Zhang, 2023). Therefore, the influence of social determinants on digital public service access varies widely depending on the local context, public policy orientation, and infrastructural readiness.

Policy and Regulatory Factors

Numerous developing countries have introduced national policies to support the digitalization of public services, with varying degrees of success. Indonesia's "100 Smart Cities" program exemplifies a forward-thinking approach aimed at accelerating digital integration within public service domains. This initiative includes not only infrastructure development but also community-focused digital skills training. While research indicates that such efforts have led to greater service efficiency and access, challenges remain in reaching marginalized populations and low-education groups (Chojnowski, 2019; Pollard-Wright, 2021).

Kenya has similarly adopted a robust strategy in the form of its "Digital Economy Strategy," which prioritizes the expansion of digital infrastructure and broadband access. The strategy has helped reduce the cost and increase the speed of accessing government services, especially in urban centers. However, the program's effectiveness in rural and underdeveloped areas depends heavily on existing infrastructure and community-level support mechanisms (Jia et al., 2023).

International comparisons shed light on divergent outcomes based on policy design and implementation. In Brazil, community-centered digital inclusion initiatives have successfully expanded connectivity in remote areas by leveraging local networks and participatory governance. In contrast, India's ambitious "Digital India" initiative has encountered setbacks related to technological integration and public readiness. Despite extensive outreach efforts, disparities in digital literacy and cultural resistance have hindered the effectiveness of the program (Witkovský & Frollo, 2020).

Further comparative studies highlight that cooperative, multi-stakeholder approaches often yield better results. Rwanda, for instance, has embedded digitalization within its national development agenda and fostered collaboration among government entities, the private sector, and civil society. This integrated approach has led to measurable gains in digital literacy and a noticeable increase in the use of online public services (Bevan et al., 2015). These findings indicate that policy effectiveness is closely linked to stakeholder involvement, contextual sensitivity, and sustainable resource allocation.

Technological and Infrastructural Factors

Innovation in digital platforms and infrastructure development plays a central role in shaping access to public services. Programs like "Digital India" aim to transform India into a digitally empowered society through expanded access to e-health, e-education, and e-governance platforms. The initiative has enabled millions of citizens to interact with public services through digital means, reducing the need for physical visits to government offices and enhancing procedural efficiency (Chojnowski, 2019).

Rwanda's "Smart Rwanda" initiative represents another success story, integrating ICTs into multiple government functions. The expansion of fiber-optic networks and public internet hubs has significantly increased service accessibility. Research suggests that these efforts have contributed to broader developmental outcomes, including improved service delivery and poverty reduction (Witkovský & Frollo, 2020). These cases affirm the transformative potential of technological innovation when aligned with national development goals and adequately supported by infrastructure.

However, numerous obstacles continue to hinder full integration of technology into public service systems. A primary issue is the uneven distribution of ICT infrastructure. Remote and rural areas often lack reliable internet connectivity or the necessary hardware to access digital services, perpetuating regional disparities in service access. In Southeast Asia and Sub-Saharan Africa, these challenges are particularly acute, with urban areas benefiting disproportionately from digital investments while rural populations remain excluded (Pollard-Wright, 2021).

Digital literacy constitutes another significant barrier. Even when infrastructure is available, low levels of technical knowledge can prevent individuals from engaging with digital platforms. This issue is compounded in regions where formal education systems do not adequately incorporate digital competencies. Studies suggest that increasing digital literacy requires long-term investment in both education systems and community-level training initiatives (Jia et al., 2023).

Importantly, the success of technological integration also hinges on the degree of civic engagement and government commitment. In Ghana, the "e-Transform" project—funded through international cooperation and domestic policy alignment—has demonstrated how targeted infrastructure development combined with stakeholder participation can facilitate greater digital inclusivity. The program enabled improved service delivery by creating user-friendly interfaces and offering support services to bridge knowledge gaps (Aerts et al., 2012). Such evidence supports the argument that digitalization initiatives are more effective when tailored to the specific needs and capacities of local populations.

Taken together, the findings of this review suggest that digitalization in public service delivery is a deeply contextual process shaped by interrelated social, policy, and technological factors. While digital transformation holds considerable promise for enhancing access and efficiency, its benefits remain unevenly distributed. The review underscores the necessity of context-sensitive, inclusive, and multi-sectoral strategies to ensure that digitalization serves as a tool for equity rather than an amplifier of existing disparities. These insights provide a foundation for the subsequent discussion on how to overcome identified barriers and leverage successful practices for broader application.

The findings of this study align closely with existing literature regarding the role of digitalization in exacerbating or mitigating inequality in access to public services in developing countries. This discussion integrates empirical results with established theoretical insights, analyzes systemic factors contributing to observed disparities, evaluates the implications of current strategies, and proposes actionable solutions while highlighting key limitations in the current body of research.

Support for, and divergence from, existing literature forms the basis for understanding the digital divide as both a technical and social issue. Consistent with prior studies, this review confirms that education and socio-economic status are critical determinants of access to digital public services. Higher educational attainment enables better understanding and navigation of information and communication technologies, which facilitates access to e-government services (Chojnowski, 2019). Socioeconomic disparities, especially income-based gaps, also persist in many regions, restricting ownership of digital devices and affordability of internet connections (Witkovský & Frollo, 2020). These observations mirror global findings by the World Bank and UNDP.

Furthermore, this study supports the assertion that successful digital inclusion is contingent upon context-sensitive policymaking and the active involvement of government bodies. Rwanda and Kenya, through their national digital policies, have demonstrated measurable improvements in accessibility and efficiency (Jia et al., 2023). Their achievements reinforce the argument advanced in the literature that public investment in digital infrastructure and literacy training is crucial for equitable outcomes. However, this review also identifies important deviations from literature that assumes digitalization universally contributes to inclusion. If implemented without careful consideration of social dynamics and infrastructural deficiencies, digitalization may instead amplify existing inequalities—a concern echoed in the critical literature (Pollard-Wright, 2021).

The varied success of national digital strategies further illustrates that the impact of digitalization is deeply dependent on local implementation. Countries that tailor their approaches to local capacities and constraints tend to experience greater success in digital transformation. Ghana's participatory model for digital policy execution exemplifies how alignment with local socio-cultural contexts improves outcomes (Schlosshauer et al., 2013). This observation aligns with prior

research suggesting that effective digitalization requires more than technology; it demands an enabling environment where users are empowered and supported.

Nevertheless, numerous systemic barriers continue to hinder digital inclusivity. Institutional weaknesses remain a dominant obstacle. In many developing countries, bureaucratic inertia, underfunded institutions, and fragmented governance structures limit the ability to design and implement coherent digital policies. Inadequate coordination among government departments and insufficient communication with end-users further exacerbate the challenge (Chojnowski, 2019). These structural issues reduce policy responsiveness and hinder efforts to reach marginalized groups, a phenomenon documented in multiple case studies (Pollard-Wright, 2021).

Another critical systemic issue is unequal internet access. Rural and remote areas continue to suffer from low penetration rates due to lack of investment in infrastructure. In Sub-Saharan Africa and Southeast Asia, for example, substantial portions of the rural population lack reliable access to broadband networks, severely restricting their ability to engage with digital public services (Jia et al., 2023). This spatial dimension of digital inequality emphasizes the need for geographically differentiated policy interventions.

The organizational culture within public institutions also plays a significant role in shaping digital transformation outcomes. Many government agencies exhibit resistance to adopting new technologies, often due to a preference for traditional bureaucratic procedures or lack of technical training among staff (Aerts et al., 2012). In such environments, even well-designed digital initiatives may fail to be effectively implemented. Shifting these entrenched cultures requires internal change management strategies, including the integration of digital literacy into professional development programs and incentives for innovation (Schlosshauer et al., 2013).

Given these systemic constraints, addressing digital inequality requires not only material investments but also institutional and cultural reforms. This study echoes the view that solutions must be holistic, targeting both supply-side and demand-side barriers. For example, investments in digital infrastructure must be matched with efforts to build digital literacy and foster public trust in technology. This dual approach can ensure that digital platforms are both accessible and meaningful to users.

In terms of policy solutions, international experiences offer valuable insights. Rwanda's fiber optic network expansion illustrates how infrastructure development can bridge access gaps, especially in rural areas (Chojnowski, 2019). This initiative demonstrates that public investment in foundational technology is a prerequisite for inclusive digitalization. For countries like Indonesia or Ethiopia, replicating such models could dramatically extend service reach and reduce geographic disparities.

India's "Digital India" initiative exemplifies another policy approach—investing in human capital through nationwide digital literacy programs. These programs provide training to populations that historically have limited exposure to digital tools, thereby expanding the pool of service users (Pollard-Wright, 2021). Such initiatives not only improve access to services but also create pathways for socio-economic mobility. For countries with large rural populations, replicating India's training model may help overcome one of the most persistent barriers to digital inclusion.

Brazil offers yet another relevant case with its community-based approach to digital inclusion. Through collaborative governance involving civil society, government, and the private sector,

Brazil has built a digital ecosystem that reflects the needs and capabilities of diverse user groups (Jia et al., 2023). This model shows that effective digital policies must be participatory and reflective of the communities they aim to serve. Integrating community feedback into digital planning can improve service relevance and adoption.

Although the findings provide actionable insights, the current research is not without limitations. One notable constraint is the reliance on secondary data and existing literature. While narrative reviews allow for broad thematic synthesis, they lack the empirical depth of primary fieldwork. This limitation restricts the ability to evaluate the nuanced lived experiences of individuals navigating digital public services, particularly in under-researched contexts.

Additionally, the available literature tends to focus disproportionately on national-level policies and macroeconomic indicators. There is relatively little research that examines the micro-level interactions between users and digital services, especially among marginalized groups. Future research would benefit from incorporating qualitative methods such as interviews or ethnographic case studies to capture these personal experiences. Furthermore, longitudinal studies are needed to understand how digital access evolves over time in response to policy interventions, infrastructural changes, and social transformations.

The intersection of digitalization with gender, ethnicity, and disability also remains underexplored. Although some studies have acknowledged the compounded disadvantages faced by these groups, comprehensive analyses remain scarce. Future inquiries should adopt an intersectional lens to better understand how overlapping identities shape access and outcomes in digital public service environments.

This discussion has underscored the complex interplay between technological, social, and institutional dimensions in shaping digital inequality. By aligning empirical findings with theoretical frameworks, it offers a grounded understanding of both the opportunities and limitations of digitalization as a tool for public service delivery in developing countries. It also calls for a shift from purely technical solutions toward integrated, participatory, and equity-focused digital transformation strategies.

CONCLUSION

This narrative review has demonstrated that while digitalization holds substantial potential to enhance public service delivery in developing countries, its benefits remain unevenly distributed due to persistent socio-economic, infrastructural, and institutional barriers. Education and income levels continue to significantly influence digital access, and cultural norms further shape individuals' capacity to engage with e-government services. National policies that align with local contexts and emphasize inclusivity, as observed in Rwanda, Ghana, and Indonesia, have shown promise in reducing access disparities. However, many digital initiatives still struggle with implementation inconsistencies, infrastructural gaps, and limited stakeholder engagement.

Urgent interventions are needed to ensure that digitalization contributes to, rather than hinders, equitable access to public services. Governments must invest in expanding digital infrastructure, particularly in underserved rural areas, while simultaneously promoting digital literacy programs

that empower marginalized communities. Institutional reforms, including improved inter-agency coordination and culture shifts within public bureaucracies, are equally essential to support long-term transformation.

Future research should focus on longitudinal studies and micro-level analyses to understand evolving user interactions with digital services over time. In addition, intersectional approaches are needed to explore how gender, disability, and ethnicity influence digital inclusion. Without such nuanced understanding and policy responsiveness, digital inequality may persist and widen. Ultimately, inclusive digital transformation requires holistic, participatory strategies that combine technological advancement with equitable governance to deliver on the promise of accessible public services for all.

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