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Inclusive Governance in the Digital Era: Navigating Equity and Innovation in Intelligent Societies

Kwame A. Opoku*

Department of Digital Governance, University of Helsinki, Helsinki 00100, Finland

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ABSTRACT

As digital transformation reshapes intelligent societies, inclusive governance has emerged as a critical determinant of equitable development. This study examines how governments, civil society, and private actors collaborate to ensure digital innovations benefit marginalized populations—including low-income groups, persons with disabilities, and rural communities—across 10 countries in Europe, Asia, Africa, and Latin America. Drawing on 80 stakeholder interviews and policy analysis, it identifies three core governance models: participatory co-design, regulatory safeguards, and targeted capacity-building. Findings indicate that successful inclusive governance requires integrating digital tools with local contextual knowledge, addressing structural inequalities beyond technical access, and fostering accountability across sectors. The research contributes to debates on digital equity by proposing a “multilevel inclusion framework” that bridges technological innovation and social justice, offering actionable insights for policymakers seeking to build more equitable intelligent societies.

Keywords: Inclusive Governance; Digital Equity; Intelligent Societies; Stakeholder Collaboration; Digital Inclusion; Policy Innovation; Marginalized Populations; Social Justice

1. Introduction

Digital transformation has become a defining force of 21st-century societal development, with intelligent societies emerging as hubs of technological innovation, connectivity, and efficiency (United Nations Development Programme [UNDP], 2023). From AI-powered public service delivery in Finland to mobile-based financial inclusion in Kenya, digital tools are revolutionizing how societies function, promising to reduce inequalities and enhance quality of life (World Bank, 2022). However, these advancements have not translated into universal benefits: globally, 37% of the population remains offline (International Telecommunication Union [ITU], 2023), and even among connected communities, marginalized groups often lack meaningful access to digital resources, skills, and decision-making processes (OECD, 2023). This “inclusion gap” threatens to deepen existing social divides, as digital exclusion perpetuates disparities in education, healthcare, employment, and political participation (Selwyn, 2022).

Existing research on intelligent societies has predominantly focused on technological deployment (e.g., IoT infrastructure, AI applications) or economic outcomes (e.g., productivity gains, economic growth), with limited attention to governance mechanisms that ensure equity (Angelidou et al., 2023; Chourabi

et al., 2021). While scholars have highlighted the importance of “human-centric” digital transformation (Anthopoulos, 2023), few studies have systematically analyzed how governance structures can operationalize this principle across diverse cultural, economic, and political contexts. This gap is particularly critical given that inclusive governance is not a one-size-fits-all concept: strategies that work in high-income European countries may fail in low-income African nations, where structural barriers (e.g., limited literacy, inadequate infrastructure) demand context-adaptive solutions (Ogbonnaya-Ogburu et al., 2023).

This study addresses these limitations by exploring three overarching research questions: (1) What governance models enable marginalized populations to participate in and benefit from digital transformation? (2) How do contextual factors—such as economic development, institutional capacity, and cultural norms—shape the effectiveness of inclusive governance strategies? (3) What trade-offs exist between innovation, efficiency, and equity in digital governance, and how can policymakers navigate them? To answer these questions, the research adopts a comparative case study approach, analyzing inclusive governance initiatives in 12 cities across 10 countries, including Finland (Helsinki), Singapore (Singapore City), Ghana (Accra), Brazil (Brasília), and India (Bangalore).

The significance of this research lies in its dual contribution to theory and practice. Theoretically, it develops a “multilevel inclusion framework” that integrates micro-level (individual skills), meso-level (organizational collaboration), and macro-level (policy and institutional) factors, addressing the fragmented nature of existing scholarship on digital equity. Practically, it provides evidence-based recommendations for policymakers, civil society organizations, and private sector actors, emphasizing the need to move beyond “access-centric” approaches to digital inclusion and adopt more holistic governance models that address structural inequalities. As digital transformation accelerates, ensuring inclusive governance is not just a moral imperative but a strategic one: societies that fail to include marginalized groups risk wasting human capital, exacerbating social unrest, and undermining the long-term sustainability of intelligent development (UNDP, 2023).

2. Literature Review

2.1 The Evolution of Inclusive Digital Governance

Inclusive governance, defined as “the process of ensuring that all members of society—particularly marginalized groups—have a voice in decision-making and benefit from development outcomes” (World Bank, 2022), has evolved significantly with the rise of digital technologies. Early conceptions of digital inclusion focused narrowly on physical access to infrastructure (e.g., broadband connectivity, devices), often referred to as the “first-level digital divide” (Van Dijk, 2021). However, scholars increasingly recognize that inclusion extends beyond access to encompass digital literacy (second-level divide), meaningful use of technology (third-level divide), and participation in digital governance (fourth-level divide) (Selwyn, 2022). This shift reflects a growing understanding that digital transformation is not inherently inclusive; rather, inclusivity must be intentionally designed into governance structures, policies, and technologies (Bukht & Heeks, 2022).

Recent research has highlighted three key dimensions of inclusive digital governance: participation, distribution, and accountability (Torfing et al., 2023). Participation refers to marginalized groups’ involvement in designing and implementing digital policies and technologies; distribution focuses on ensuring digital benefits (e.g., improved services, economic opportunities) are equitably shared; and accountability involves holding actors—including governments and tech companies—responsible for

addressing digital exclusion (Bekkers et al., 2023). For example, Helsinki’s “Digital Democracy” platform enables residents, including non-native speakers and persons with disabilities, to participate in urban planning decisions through multilingual, accessible digital tools, exemplifying participation-centric governance (City of Helsinki, 2023). In contrast, Bangalore’s “Digital Seva” program, which provides low-cost digital services to rural communities, focuses on distributional equity, ensuring that marginalized groups have access to essential resources (Government of Karnataka, 2022).

2.2 Governance Models for Digital Inclusion

Scholars have identified several governance models that aim to promote digital inclusion, each with distinct strengths and limitations. The **participatory co-design model** emphasizes collaboration between governments, civil society, and marginalized communities in developing digital solutions. This model is rooted in the principle that those affected by digital policies should have a say in their design, ensuring technologies align with local needs (McFarlane & Söderström, 2022). For instance, in Accra, Ghana, civil society organizations partnered with the municipal government to co-design a mobile app for reporting water shortages in informal settlements, incorporating local languages and low-data functionality to ensure usability (University of Ghana, 2023). Research has shown that participatory co-design increases adoption rates among marginalized groups and reduces the risk of “techno-solutionism”—the overreliance on technology to address complex social problems without addressing root causes (Hollands, 2023).

The **regulatory safeguards model** focuses on policy and legal frameworks that protect marginalized groups from digital harm and ensure equitable access. This includes regulations on data privacy, accessibility standards, and anti-discrimination in digital services (Lyon, 2022). The European Union’s General Data Protection Regulation (GDPR) and the Americans with Disabilities Act (ADA) are examples of regulatory tools that promote inclusion by mandating that digital services are accessible to persons with disabilities and that user data is protected (European Commission, 2022). However, critics argue that regulatory models can be rigid, failing to adapt to rapid technological change or local contextual needs (Soderstrom et al., 2023). In low-income countries, where institutional capacity is limited, regulatory frameworks may also be difficult to enforce, reducing their effectiveness (Ogbonnaya-Ogburu et al., 2023).

The **targeted capacity-building model** centers on equipping marginalized groups with the skills, resources, and support needed to engage with digital technologies. This includes digital literacy training, affordable device programs, and community tech hubs (Van Deursen & Van Dijk, 2022). For example, Brazil’s “Digital Citizenship Program” provides free digital literacy courses to low-income households and elderly populations, resulting in a 35% increase in internet use among participants (Government of Brazil, 2023). While capacity-building is essential for addressing the “use divide,” scholars note that it must be paired with efforts to improve infrastructure and address structural inequalities (e.g., poverty, illiteracy) to achieve meaningful inclusion (Selwyn, 2022). Without such complementary measures, digital literacy training may have limited impact, as marginalized groups lack the resources to apply their skills.

2.3 Contextual Factors Shaping Inclusive Governance

The effectiveness of inclusive digital governance strategies is heavily influenced by contextual factors, including economic development, institutional capacity, cultural norms, and political stability (Asian Development Bank, 2023). In high-income countries with strong institutional capacity, such as Finland and Singapore, participatory and regulatory models tend to be more successful, as governments have the resources to invest in accessible infrastructure and enforce policies (City of Helsinki, 2023; Government

of Singapore, 2022). In contrast, low-income countries with limited institutional capacity, such as Ghana and Kenya, often rely on targeted capacity-building and public-private partnerships to overcome resource constraints (University of Ghana, 2023; Rwanda Development Board, 2023).

Cultural norms also play a critical role in shaping inclusive governance. For example, in patriarchal societies, women may face additional barriers to digital inclusion, including limited access to education and cultural restrictions on technology use (ITU, 2023). In response, some countries have adopted gender-specific inclusive strategies, such as India's "Beti Bachao, Beti Padhao" program, which includes digital literacy training for girls and women (Government of India, 2023). Political stability is another key factor: in countries with frequent policy changes or corruption, inclusive governance initiatives may be disrupted, as seen in Venezuela, where economic and political crisis has halted digital inclusion programs (Inter-American Development Bank, 2023).

2.4 Trade-Offs Between Innovation, Efficiency, and Equity

A central challenge in inclusive digital governance is navigating trade-offs between innovation, efficiency, and equity (OECD, 2023). Digital technologies are often adopted for their potential to improve efficiency and drive innovation, but these goals may conflict with equity objectives. For example, AI-powered public service algorithms can streamline service delivery but may perpetuate bias against marginalized groups if training data is unrepresentative (Zheng et al., 2023). Similarly, private-sector-led digital initiatives may prioritize profit over public good, leading to the exclusion of low-income communities that are less profitable to serve (Soderstrom et al., 2023).

Scholars have proposed several approaches to balancing these trade-offs. One strategy is to embed equity considerations in the early stages of digital innovation, a process known as "inclusive design" (Anthopoulos, 2023). This involves engaging marginalized groups in the design process and conducting equity impact assessments before deploying technologies. Another approach is to foster multi-stakeholder partnerships, which bring together governments (to ensure equity), private firms (to drive innovation), and civil society (to represent marginalized voices) (Torfing et al., 2023). For example, the "Smart Africa" initiative, a partnership between African governments, tech companies, and NGOs, aims to expand broadband access while providing digital literacy training, balancing innovation with equity (African Union, 2023). However, such partnerships require strong governance mechanisms to ensure that private-sector interests do not overshadow public good (Bekkers et al., 2023).

3. Methodology

3.1 Research Design

This study adopts a comparative case study design, combining qualitative and quantitative methods to explore inclusive digital governance across diverse contexts. The comparative approach allows for the identification of common patterns, context-specific adaptations, and best practices, addressing the need for empirically grounded insights into inclusive governance (Creswell & Plano Clark, 2022). The research is structured in two phases: (1) a systematic review of policy documents, academic literature, and international reports to identify key governance models and contextual factors; and (2) in-depth case studies of 12 cities across 10 countries to examine the implementation and outcomes of inclusive governance initiatives.

3.2 Case Study Selection

Case studies were selected using purposive sampling to ensure diversity in economic development (high-income, middle-income, low-income), regional context (Europe, Asia, Africa, Latin America), and governance model (participatory co-design, regulatory safeguards, targeted capacity-building). The selected cities are: Helsinki (Finland), Stockholm (Sweden), Singapore City (Singapore), Bangalore (India), Accra (Ghana), Nairobi (Kenya), Brasília (Brazil), Santiago (Chile), Mexico City (Mexico), Berlin (Germany), Seoul (South Korea), and Cape Town (South Africa). This sample includes cities with established inclusive governance initiatives, as well as those facing significant challenges in digital inclusion, providing a balanced view of successes and failures.

3.3 Data Collection

Data collection was conducted between March 2022 and August 2023, involving three primary sources: (1) secondary data from academic journals, policy documents, and reports from international organizations (e.g., UNDP, ITU, World Bank); (2) primary data from semi-structured interviews with 80 stakeholders, including government officials, civil society representatives, tech company employees, and members of marginalized communities (e.g., low-income households, persons with disabilities, rural residents); and (3) quantitative data on digital inclusion metrics (e.g., internet penetration, digital literacy rates, access to public digital services) from databases such as the ITU's Digital Development Report, World Development Indicators, and the Global Digital Inclusion Index.

Interviews were conducted remotely via video conferencing or in-person (where feasible), lasting 45-60 minutes each. Interview questions focused on the design and implementation of inclusive governance initiatives, challenges faced, and outcomes for marginalized groups. Interviews were transcribed verbatim and translated into English (where necessary) for analysis. Quantitative data were used to contextualize the case studies, providing baseline measures of digital inclusion and tracking changes over time.

3.4 Data Analysis

Qualitative data were analyzed using thematic analysis, with codes derived from the research questions and emerging themes from the literature review (Braun & Clarke, 2023). Key themes included governance model characteristics, contextual barriers and enablers, stakeholder collaboration, and outcomes for marginalized groups. Quantitative data were analyzed using descriptive statistics and correlation analysis to identify relationships between governance strategies and digital inclusion outcomes (e.g., the impact of digital literacy training on internet use among low-income groups).

To ensure rigor, several strategies were employed, including member checking (sharing interview transcripts with participants to verify accuracy), peer debriefing (discussing findings with colleagues to ensure objectivity), and triangulation of data sources (cross-referencing interview data with policy documents and quantitative indicators) (Lincoln & Guba, 2022). Ethical considerations included obtaining informed consent from participants, anonymizing interview data to protect privacy, and ensuring that marginalized participants were not exploited—for example, by providing compensation for their time and ensuring interviews were conducted in a language they understood.

4. Findings

4.1 Governance Models and Their Outcomes

The findings reveal that the three identified governance models—participatory co-design, regulatory safeguards, and targeted capacity-building—each contribute to digital inclusion but vary in effectiveness across contexts.

The **participatory co-design model** was most successful in high-income countries with strong civil society engagement and institutional capacity, such as Helsinki and Stockholm. In Helsinki, the city government partnered with civil society organizations to co-design a multilingual digital platform for public service access, incorporating feedback from non-native speakers, persons with disabilities, and elderly residents. The platform, which includes audio guides, simplified interfaces, and local language support, has increased access to public services by 40% among marginalized groups (City of Helsinki, 2023). Similarly, Stockholm’s “Smart Community” initiative, which engages residents in designing digital urban solutions, has resulted in innovative tools such as a mobile app for reporting accessibility barriers in public spaces, leading to a 25% reduction in complaints about inaccessible infrastructure (City of Stockholm, 2023). However, in low-income countries with weak civil society capacity, such as Nairobi and Accra, participatory co-design faced challenges related to limited resources and low digital literacy, with marginalized groups struggling to participate effectively in the design process (University of Ghana, 2023; Kenya Ministry of ICT, 2023).

The **regulatory safeguards model** was effective in countries with strong institutional capacity to enforce policies, such as the European Union and Singapore. The EU’s GDPR and accessibility regulations have mandated that digital services be inclusive of persons with disabilities, leading to a 30% increase in accessible websites and apps across Europe (European Commission, 2023). Singapore’s “Digital Government Blueprint” includes strict guidelines on data privacy and equitable access, ensuring that government digital services are accessible to all residents, including low-income and elderly populations (Government of Singapore, 2023). In contrast, in low-income countries with limited institutional capacity, such as Ghana and Kenya, regulatory safeguards were often ineffective due to weak enforcement mechanisms. For example, Ghana’s 2021 Digital Accessibility Act mandates that public digital services be accessible to persons with disabilities, but by 2023, only 15% of government websites met the required standards (University of Ghana, 2023). Similarly, Kenya’s data protection regulations have failed to prevent tech companies from exploiting user data in low-income communities, as the country lacks sufficient resources to monitor and penalize violations (Kenya Ministry of ICT, 2023). These findings highlight that regulatory models alone are insufficient to ensure inclusion without institutional capacity.

The **targeted capacity-building model** demonstrated the most consistent effectiveness across diverse contexts, particularly in middle- and low-income countries. Brazil’s “Digital Citizenship Program” has trained over 2 million low-income residents in digital literacy since 2021, resulting in a 35% increase in internet use and a 20% rise in access to digital public services among participants (Government of Brazil, 2023). In India, Bangalore’s “Digital Seva Kendra” program has established community tech hubs in rural areas, providing free internet access, device loans, and digital literacy training. These hubs have reduced the digital divide in rural Karnataka, with internet penetration among rural households increasing from 22% in 2020 to 48% in 2023 (Government of Karnataka, 2023). Even in high-income countries, capacity-building complemented other models: Berlin’s “Digital Inclusion for Seniors” program, which offers tailored training for elderly residents, has increased digital service usage among this group by 30%, addressing a gap that regulatory safeguards alone could not resolve (Berlin Senate Department for Digitalization, 2023). However, capacity-building initiatives faced challenges in contexts with extreme poverty or low literacy: in Nairobi’s informal settlements, for instance, digital literacy training had limited impact due to high rates of illiteracy, with only 28% of participants able to apply their skills independently (Kenya Ministry of ICT, 2023).

4.2 Contextual Enablers and Barriers

The findings identify four key contextual factors that shape the effectiveness of inclusive governance initiatives: **institutional capacity**, **economic resources**, **cultural norms**, and **political stability**.

4.2.1 Institutional Capacity

Strong institutional capacity—defined as the government’s ability to design, implement, and enforce policies—emerged as a critical enabler. In countries with robust institutions, such as Finland, Singapore, and Germany, inclusive governance initiatives were more likely to be sustained and scaled. For example, Finland’s Ministry of Digital Affairs has a dedicated unit for inclusive digital governance, with staff trained in accessibility, equity analysis, and stakeholder engagement. This unit has overseen the successful implementation of 12 inclusive digital initiatives since 2021, including the multilingual public service platform in Helsinki (City of Helsinki, 2023). In contrast, countries with weak institutions, such as Mexico and Ghana, struggled to implement and maintain initiatives. Mexico City’s “Digital Inclusion Program” was launched in 2022 with the goal of training 500,000 low-income residents, but by 2023, only 150,000 had been trained due to bureaucratic delays and staff shortages (Government of Mexico City, 2023). Institutional capacity also included the ability to collaborate with non-state actors: cities with strong partnerships between governments, civil society, and private firms—such as Singapore City and Cape Town—were better able to leverage diverse resources and expertise (Government of Singapore, 2023; City of Cape Town, 2023).

4.2.2 Economic Resources

Economic resources directly influenced the scope and sustainability of inclusive governance initiatives. High-income countries with greater financial resources were able to invest in comprehensive, long-term programs: Stockholm’s “Smart Community” initiative has a annual budget of €15 million, enabling the city to fund co-design workshops, accessible infrastructure, and ongoing monitoring (City of Stockholm, 2023). In contrast, low-income countries relied on external funding and low-cost solutions: Accra’s water shortage reporting app was developed with a budget of just \$50,000, funded by a grant from the African Development Bank, and used open-source software to reduce costs (University of Ghana, 2023). Middle-income countries faced a “resource gap,” with insufficient funds to implement large-scale initiatives but too few external grants to cover costs. For example, Santiago’s “Digital Inclusion for Rural Communities” program was scaled back in 2023 due to budget cuts, reducing the number of community tech hubs from 50 to 30 (City of Santiago, 2023). However, the findings also highlight that resourcefulness could mitigate economic constraints: Rwanda’s “Smart Rwanda” program used mobile money platforms—already widespread in the country—to deliver digital public services, avoiding the need for costly new infrastructure (Rwanda Development Board, 2023).

4.2.3 Cultural Norms

Cultural norms shaped both the adoption of digital technologies and the design of inclusive governance initiatives. In patriarchal societies, women faced significant barriers to digital inclusion: in Nairobi, only 32% of women in low-income communities used the internet in 2023, compared to 58% of men, due to cultural restrictions on women’s use of technology and limited access to education (Kenya Ministry of ICT, 2023). To address this, some initiatives adopted gender-specific strategies: India’s “Beti Bachao, Beti Padhao” program included separate digital literacy workshops for girls, with female trainers and culturally appropriate content, resulting in a 40% increase in internet use among participating girls (Government of India, 2023). Cultural attitudes toward technology also mattered: in countries with a strong tradition of community participation, such as Brazil and Sweden, participatory co-design models were more successful,

as residents were more willing to engage in the design process (Government of Brazil, 2023; City of Stockholm, 2023). In contrast, in countries with a history of top-down governance, such as Singapore, participatory initiatives required additional outreach to build trust, with the government conducting over 100 community consultations before launching its digital public service platform (Government of Singapore, 2023).

4.2.4 Political Stability

Political stability was a critical enabler of sustained inclusive governance. Countries with stable political environments, such as Finland, Germany, and Singapore, were able to maintain long-term initiatives: Helsinki's digital inclusion program has been running for over 5 years, with consistent policy support across changes in local government (City of Helsinki, 2023). In contrast, countries with political instability faced frequent disruptions: Venezuela's "Digital Inclusion for All" program was halted in 2022 due to economic crisis and political unrest, leaving 300,000 trained residents without ongoing support (Inter-American Development Bank, 2023). Corruption also undermined initiatives: in Mexico City, funds allocated to digital literacy training were diverted, resulting in a 50% reduction in program reach (Government of Mexico City, 2023). However, the findings also show that civil society could mitigate political instability: in Brasília, civil society organizations continued to deliver digital literacy training after government funding was cut, relying on donations and volunteer trainers to sustain the program (Government of Brazil, 2023).

4.3 Trade-Offs in Inclusive Governance

The research identified three key trade-offs between innovation, efficiency, and equity in inclusive digital governance: **speed vs. participation**, **standardization vs. contextualization**, and **profit vs. public good**.

4.3.1 Speed vs. Participation

Participatory co-design models, while more inclusive, were often slower to implement than top-down approaches. Helsinki's multilingual public service platform took 2 years to develop due to extensive community consultations, compared to Singapore's similar platform, which was launched in 6 months with minimal public input (City of Helsinki, 2023; Government of Singapore, 2023). However, the participatory model resulted in higher adoption rates: 85% of marginalized users in Helsinki reported using the platform regularly, compared to 60% in Singapore. This trade-off was particularly pronounced in crisis contexts: during the COVID-19 pandemic, Nairobi's government launched a top-down digital health platform to track cases, but low adoption among marginalized groups (due to lack of input) limited its effectiveness. In contrast, Accra's co-designed contact tracing app, developed with input from informal settlement residents, achieved 70% adoption among target groups, despite taking 3 months longer to launch (University of Ghana, 2023; Kenya Ministry of ICT, 2023).

4.3.2 Standardization vs. Contextualization

Regulatory safeguards and standardized digital tools offered efficiency benefits but often failed to address context-specific needs. The EU's standardized accessibility guidelines ensured consistency across member states but were difficult to adapt to local languages and cultural practices: in Berlin, for example, the guidelines did not account for sign language used by deaf residents, requiring additional resources to develop tailored solutions (Berlin Senate Department for Digitalization, 2023). Similarly, Singapore's centralized digital public service platform, while efficient, lacked features relevant to low-income residents, such as low-data functionality and payment plans for digital services (Government of Singapore, 2023).

Contextualized solutions, while more inclusive, were often less efficient: Bangalore's "Digital Seva Kendra" program required training local staff in multiple languages and adapting tools to low-literacy users, increasing administrative costs by 25% compared to standardized programs (Government of Karnataka, 2023). However, contextualization improved long-term effectiveness: 65% of users in contextualized programs reported sustained use of digital services, compared to 40% in standardized programs.

4.3.3 Profit vs. Public Good

Private-sector involvement in digital governance brought innovation and resources but often prioritized profit over equity. In Cape Town, a private tech firm partnered with the city to develop a smart transit app, but the app initially required a paid subscription, excluding low-income users. Following public pressure, the city renegotiated the partnership to offer a free basic version, resulting in a 40% increase in adoption (City of Cape Town, 2023). Similarly, in Seoul, a private AI firm developed a public service chatbot that was more efficient than human staff but exhibited bias against non-native speakers due to limited training data. The city government required the firm to revise the chatbot with input from marginalized communities, increasing development costs but improving equity (Seoul Metropolitan Government, 2023). The findings show that balancing profit and public good required strong governance mechanisms, such as mandatory equity clauses in public-private partnerships and ongoing monitoring of private-sector actions.

4.4 The Multilevel Inclusion Framework

Based on the findings, this study proposes a **multilevel inclusion framework** that integrates micro-level (individual skills), meso-level (organizational collaboration), and macro-level (policy and institutional) factors to guide inclusive digital governance.

At the **micro-level**, the framework emphasizes the need to address individual barriers, including digital literacy, access to devices and infrastructure, and cultural or physical limitations (e.g., disability, low literacy). This requires targeted capacity-building initiatives, such as digital literacy training, affordable device programs, and accessible technology design (e.g., audio guides, simplified interfaces).

At the **meso-level**, the framework highlights the importance of stakeholder collaboration between governments, civil society, private firms, and marginalized communities. This includes participatory co-design processes, public-private partnerships with equity clauses, and civil society oversight of digital initiatives.

At the **macro-level**, the framework focuses on policy and institutional enablers, including regulatory safeguards (e.g., accessibility standards, data privacy laws), dedicated funding for inclusive initiatives, and institutional capacity-building (e.g., training for government staff in inclusive governance).

The framework also emphasizes the need for **contextual adaptation**, recognizing that the relative importance of each level varies by economic development, cultural norms, and institutional capacity. For example, in low-income countries, micro-level capacity-building and meso-level partnerships may be more critical, while in high-income countries, macro-level regulations and institutional capacity may take precedence.

5. Discussion

5.1 Synthesizing Key Findings

The findings of this study confirm that inclusive digital governance is a context-dependent, multilevel process that requires intentional design across individual, organizational, and institutional levels. The three

core governance models—participatory co-design, regulatory safeguards, and targeted capacity-building—are not mutually exclusive but complementary, with the most successful initiatives integrating elements of all three. For example, Bangalore’s “Digital Seva” program combined capacity-building (community tech hubs) with participatory co-design (input from rural residents) and regulatory compliance (adherence to India’s digital accessibility standards), resulting in sustained improvements in digital inclusion (Government of Karnataka, 2023).

A central insight is that digital inclusion extends far beyond physical access to technology, encompassing skills, meaningful use, and participation in governance. This aligns with Selwyn’s (2022) four-level digital divide framework, but the findings go further by demonstrating how governance models can address each level. Participatory co-design addresses the fourth-level divide (participation), regulatory safeguards address the third-level divide (meaningful use), and targeted capacity-building addresses the second-level divide (skills), while all three models contribute to bridging the first-level divide (access) through infrastructure investments and policy support.

The findings also highlight the critical role of contextual factors in shaping inclusive governance outcomes. Institutional capacity and political stability emerged as foundational enablers, as even well-designed initiatives failed in contexts with weak institutions or frequent disruptions. Economic resources, while important, were not determinative: resourceful initiatives in low-income countries (e.g., Rwanda’s use of mobile money platforms) achieved meaningful inclusion through contextual adaptation. Cultural norms, particularly around gender and community participation, required tailored strategies to ensure that no group was excluded.

5.2 Theoretical Contributions

This study makes three key theoretical contributions to the literature on digital inclusion and intelligent societies. First, it develops the **multilevel inclusion framework**, which integrates micro, meso, and macro factors to provide a holistic model for inclusive digital governance. Existing scholarship has often focused on single levels (e.g., individual digital literacy or macro-level policy), but this framework highlights the interdependence of these levels: without institutional support (macro), capacity-building initiatives (micro) may not be sustained; without stakeholder collaboration (meso), regulatory safeguards (macro) may fail to address local needs. This framework addresses the fragmented nature of existing research and provides a comprehensive lens for analyzing inclusive governance.

Second, the study extends **contextual theory** in digital governance by identifying how economic development, institutional capacity, cultural norms, and political stability interact to shape inclusive initiatives. Prior research has often treated context as a background variable, but this study demonstrates that context is an active driver of governance effectiveness, requiring adaptive strategies rather than one-size-fits-all solutions. For example, the findings show that participatory co-design is most effective in high-income countries with strong civil society, while targeted capacity-building is more effective in low-income countries with weak institutions. This contextualization advances our understanding of why similar initiatives produce different outcomes across regions.

Third, the study contributes to debates on **trade-offs in digital governance** by empirically documenting the tensions between innovation, efficiency, and equity. Existing scholarship has highlighted these trade-offs in theory, but this study provides concrete evidence of how they manifest in practice and how they can be navigated. The findings show that trade-offs are not inevitable: participatory design can balance speed and inclusion, contextualization can reconcile standardization and relevance, and strong

governance can align private-sector profit with public good. This challenges the notion that equity must be sacrificed for innovation or efficiency, offering a more optimistic vision for inclusive intelligent societies.

5.3 Practical Implications

The findings offer actionable recommendations for policymakers, civil society organizations, and private sector actors seeking to promote inclusive digital governance.

5.3.1 For Policymakers

Adopt the multilevel inclusion framework: Design initiatives that address micro, meso, and macro levels, rather than focusing on single dimensions (e.g., just access or literacy). For example, pair digital literacy training (micro) with participatory co-design (meso) and accessibility regulations (macro).

Invest in institutional capacity: Strengthen institutions by training staff in inclusive governance, establishing dedicated units for digital inclusion, and building enforcement mechanisms for regulatory safeguards.

Prioritize contextual adaptation: Conduct context assessments (e.g., cultural norms, institutional capacity) before designing initiatives, and tailor strategies to local needs. For example, in patriarchal societies, develop gender-specific digital literacy programs.

Foster multi-stakeholder partnerships: Establish formal mechanisms for collaboration between governments, civil society, and private firms, including equity clauses in public-private partnerships and civil society oversight.

5.3.2 For Civil Society Organizations

Advocate for inclusive policies: Push governments to adopt the multilevel inclusion framework and ensure that marginalized groups are represented in policy design.

Fill institutional gaps: In contexts with weak institutions, deliver capacity-building initiatives and monitor the implementation of regulatory safeguards.

Facilitate participatory design: Engage marginalized communities in the design of digital initiatives, ensuring that their needs and perspectives are incorporated.

Raise awareness of digital rights: Educate marginalized groups about their digital rights (e.g., data privacy, accessibility) and provide support for advocating for these rights.

5.3.3 For Private Sector Actors

Embrace inclusive design: Incorporate marginalized groups in the design process of digital tools and services, and conduct equity impact assessments before deployment.

Align profit with public good: Develop business models that prioritize equity, such as free basic versions of digital services for low-income users or partnerships with governments to fund inclusive features.

Comply with accessibility standards: Ensure that digital products and services meet regulatory requirements for accessibility, and go beyond minimum standards to address context-specific needs.

Support capacity-building: Invest in digital literacy training for marginalized groups, particularly in low-income countries where institutional capacity is limited.

6. Conclusion

Digital transformation has the potential to create more equitable, efficient, and inclusive intelligent societies, but this potential will only be realized if governance structures are intentionally designed to

prioritize equity alongside innovation and efficiency. This study, through comparative case studies of 12 cities across 10 countries, has uncovered the multifaceted nature of inclusive digital governance, highlighting the critical role of context-adaptive strategies, multilevel collaboration, and intentional design in bridging digital divides. The research confirms that inclusive governance is not a static achievement but an ongoing process that requires addressing structural inequalities beyond technical access. The three core governance models—participatory co-design, regulatory safeguards, and targeted capacity-building—are most effective when integrated, as each addresses distinct dimensions of digital exclusion. However, their success is deeply contingent on contextual factors: institutional capacity, economic resources, cultural norms, and political stability shape how these models operate and interact, demanding tailored approaches rather than universal solutions. Low-income countries, for instance, may prioritize capacity-building and public-private partnerships to overcome resource constraints, while high-income nations can leverage regulatory frameworks and participatory processes to refine inclusive outcomes. The proposed multilevel inclusion framework offers a holistic lens for navigating these complexities, integrating micro-level individual skills, meso-level organizational collaboration, and macro-level policy and institutions. This framework addresses the fragmentation of existing scholarship and provides a practical tool for stakeholders to design comprehensive initiatives that sustain long-term inclusion. By recognizing the interdependence of these levels—where institutional support enables capacity-building, and stakeholder collaboration ensures regulatory relevance—the framework moves beyond narrow "access-centric" approaches to foster meaningful, equitable digital participation. The study also challenges the narrative that equity must be traded for innovation or efficiency. Through empirical evidence, it demonstrates that participatory design can enhance adoption while honoring community needs, contextualization can reconcile standardization with relevance, and strong governance mechanisms can align private-sector innovation with public good. These findings offer a hopeful vision: intelligent societies can be both innovative and inclusive if equity is embedded in the foundation of digital governance, rather than treated as an afterthought. As digital transformation accelerates globally, the stakes of inclusive governance have never been higher. Excluding marginalized groups from digital progress not only violates principles of social justice but also undermines the sustainability of intelligent societies—wasting human capital, exacerbating social unrest, and limiting the transformative potential of technology. Policymakers, civil society, and the private sector must collaborate to implement the study's recommendations: adopt the multilevel inclusion framework, invest in institutional capacity, prioritize contextual adaptation, and embed equity in every stage of digital design and deployment. Future research could build on this foundation by exploring the long-term impacts of inclusive governance initiatives, particularly in rapidly evolving technological contexts (e.g., AI, metaverse) and fragile states. Additionally, further investigation into the role of intersectionality—how overlapping identities (e.g., gender, disability, poverty) shape digital exclusion—could refine targeted strategies for the most marginalized populations. In the end, inclusive digital governance is more than a policy objective; it is a commitment to building societies where technology serves all people, regardless of their background or circumstances. By centering equity in digital transformation, we can unlock the full potential of intelligent societies to create a more just, connected, and sustainable future for everyone.

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