

Ethical Governance and Multi-Stakeholder Partnerships to Bridge the Digital Divide: Strategies for Inclusive Digital Transformation in Sub-Saharan Africa

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Abstract

This paper is motivated by digital transformation as a significant pathway for economic and social development within selected three Sub-Saharan African countries, grounded by continental initiatives of the African Union's Digital Transformation Strategy for Africa (2020-2030) and digital-development practices. However, this expansion of digital infrastructure has not eliminated inequalities in digital access, affordability, digital skills, gender disparities, and online safety, while weaknesses in institutional arrangements constrain participatory actions in the digital economy. The objective is to investigate how ethical governance and multi-stakeholder partnerships stimulate inclusive digital transformation in Sub-Saharan Africa. A qualitative comparative case-study design examines digital-transformation initiatives in Nigeria, Rwanda and Kenya using UNESCO's ROAM-X framework. Evidence is drawn from policy documents, institutional reports and scholarly literature. The findings indicate that the three countries demonstrate complementary approaches to digital inclusion: Nigeria emphasises institutional coordination, digital skills and inclusive access; Rwanda demonstrates an integrated digital-inclusion policy architecture; while Kenya illustrates an innovation- and partnership-oriented ecosystem. The findings suggest that multi-stakeholder partnerships are more likely to support inclusive digital transformation when embedded within transparent, accountable and

participatory governance arrangements. The study proposes four strategies: hybrid connectivity and affordability models, gender-responsive digital-skills development, institutionalised participatory governance, and stronger privacy, cybersecurity and responsible-technology safeguards. The study contributes to governance-oriented digital-inclusion scholarship and provides key policy implications for equitable digital transformation aligned with Sustainable Development Goals 9, 10 and 17.

Keywords: Digital divide, ethical governance, multi-stakeholder partnerships, ROAM-X framework, Sub-Saharan Africa

1. Introduction

Sub-Saharan Africa stands at the cusp of a digital revolution that could transform economies, societies, and governance structures. The African Union's Digital Transformation Strategy for Africa (2020-2030) envisions an integrated, inclusive digital society and economy (Africa, Union, 2020). This is complemented by the World Bank's Digital Economy for Africa (DE4A) initiative. Together, these frameworks aim to harness mobile broadband, artificial intelligence, fintech, and other technologies to promote inclusive growth and sustainable development. Yet the promise remains unevenly realized.

Despite improvements in mobile broadband coverage, adoption lags due to persistent barriers in infrastructure, affordability, digital skills, and relevance of content among the Sub-Saharan Africa. Specifically, within Nigeria, Rwanda and Kenya (Tryphone et al., 2023). These missing links risk deepening existing inequalities if not addressed through deliberate interventions. Recent evidence reinforces this distinction. Global System for Mobile Communications Association (GSMA) reports that Africa had 416 million mobile-internet users in 2024, while a substantial majority of the population remained unconnected or did not use mobile internet despite living within coverage areas. Device affordability and digital skills remain major barriers (Anning-Dorson, 2025). The gender dimension is equally significant. GSMA's 2025 evidence indicates that the mobile-internet gender gap in Sub-Saharan Africa remained particularly wide, with affordability, smartphone ownership, literacy and digital skills contributing to women's lower levels of use. These conditions demonstrate that the digital divide should not be conceptualised simply as the absence of telecommunications infrastructure. Digital exclusion also arises from differences in affordability, devices, skills, quality, safety, relevance and the capacity to convert digital access into meaningful social and economic outcomes. Van Deursen and van Dijk (2019), for example, demonstrate that inequalities in material access to devices, software and continuing access costs remain important even where physical connectivity is available. The governance dimension of digital transformation is therefore increasingly important. Digital technologies can support inclusion and economic development, but they also create risks involving privacy, cybersecurity, surveillance, discrimination, unequal participation, data misuse and algorithmic bias. Consequently, digital transformation requires governance arrangements

that do more than facilitate technological adoption; they must also protect rights, promote transparency, enable participation and ensure that benefits are distributed equitably. This paper argues that ethical governance and multi-stakeholder partnerships should be treated as complementary mechanisms for advancing meaningful digital inclusion. Ethical governance is understood as governance that incorporates transparency, accountability, participation, equity, privacy, security and responsible use of digital technologies. Multi-stakeholder partnerships refer to structured collaboration among governments, private enterprises, civil-society organisations, communities, universities, technical organisations and development partners. The study comparatively examines Nigeria, Rwanda and Kenya. The three cases were selected because they have established national digital-transformation initiatives and documented institutional engagement involving multiple actors. They also provide variation in national policy environments and approaches to digital transformation. The purpose is not to rank the countries or establish that one partnership model is universally superior. Rather, the cases are used to identify governance mechanisms, implementation patterns and potentially transferable practices. This study adopted UNESCO's ROAM-X framework as an analytical lens (Dreier et al., 2022; Goshu & Ridwan, 2026). ROAM-X assesses internet development according to four core principles Rights, Openness, Accessibility and Multi-stakeholder participation together with cross-cutting issues including gender, children and young people, economic dimensions, trust and security, and legal and ethical aspects. UNESCO's current framework provides an updated basis for assessing digital-development environments and their inclusiveness. This paper makes three contributions. First, it extends discussion of the

digital divide beyond infrastructure by incorporating governance and ethical considerations. Second, it operationalises ethical governance through observable indicators that can be applied comparatively. Third, it uses evidence from three African cases to identify policy strategies while maintaining appropriate limits on causal interpretation. This paper argues that ethical governance anchored in transparency, accountability, data privacy, equity, and human rights combined with multi-stakeholder partnerships offers the most viable pathway to bridge these divides. By comparatively analyzing initiatives in Nigeria, Rwanda, and Kenya, the study demonstrates how targeted policies and collaborative models can translate high-level strategies into measurable inclusive outcomes. Nigeria, Rwanda, and Kenya were selected because they represent diverse contexts (West Africa, East/Central Africa, and an innovation hub in East Africa) while sharing active digital strategies and documented multi-stakeholder engagement. Accordingly, this paper responds to the following research questions: i. How does ethical governance promote the bridge of inclusive digital transformation in Sub-Saharan Africa? ii. How does multi-stakeholder partnership foster inclusive digital transformation in Sub-Saharan Africa?

Thus, the aim of this paper is to investigate how ethical governance and multi-stakeholder partnerships stimulate the bridge of inclusive digital transformation in Sub-Saharan Africa. Other parts of the study include; literature review, methodology, results and discussion of findings, recommendations, and conclusions.

2. Literature Review

Digital inclusion extends beyond internet connectivity to encompass affordability, digital literacy, access to devices, and meaningful

participation in the digital economy (Ehimuan et al., 2024). The African Union (2020) identifies digital infrastructure, skills, cybersecurity, and inclusive governance as key pillars, advocating multi-stakeholder partnerships. The World Bank (2022) emphasizes effective governance and public-private collaboration under the DE4A initiative. The United Nations Development Programme (2024) stresses transparency, accountability, equity, and human rights. Van Deursen and van Dijk (2019) show that the digital divide has evolved to include disparities in skills and socio-economic outcomes.

2.1 Digital Transformation in Sub-Saharan Africa

The AU Digital Transformation Strategy provides a continental policy architecture for digital development. Its vision is an integrated and inclusive digital society and economy that improves quality of life. The strategy identifies digital infrastructure and digital skills as foundation pillars while also addressing digital industry, digital trade and financial services, digital governance, education, health and agriculture. It also identifies cybersecurity, privacy and personal-data protection as important cross-cutting concerns. The strategy further recognises that successful transformation requires political commitment, private-sector and civil-society engagement, policy coordination, investment, capacity development and monitoring and evaluation. This provides a direct policy rationale for examining multi-stakeholder partnerships alongside governance. The World Bank similarly approaches African digital transformation as an ecosystem involving connectivity, digital public infrastructure, digital services, skills and enabling institutions. Its regional evidence suggests that digital transformation can contribute to economic development, but that infrastructure investment alone cannot resolve affordability, gender and

skills constraints. Empirical evidence indicates, however, that the benefits of digital transformation are not automatic and depend substantially on the level of infrastructure, human capital, institutional capacity and technology adoption. Myovella, Karacuka and Haucap (2020), using cross-country panel data, found that digitalisation contributes positively to economic growth in SSA, although the magnitude of the effect differs considerably from that observed in OECD economies. Similarly, Ndubuisi and Owusu (2021) provide empirical evidence that improvements in digital infrastructure can influence employment in the services sector across SSA countries, demonstrating how expanded connectivity can create new economic opportunities. More recent evidence, however, suggests that the productivity benefits of digital transformation emerge only after a critical level of adoption has been achieved. A 2025 study on SSA found that digital transformation does not automatically translate into higher productivity and that institutional quality, human capital, innovation capacity and technical skills are important conditions for converting digital investments into productivity gains. This suggests that digital transformation in SSA should be understood as a broader socio-economic transformation requiring complementary investments in infrastructure, skills, institutions and innovation rather than simply the adoption of digital technologies.

2.2 Ethical Governance and Digital Inclusion

Ethical governance has become increasingly important as governments and businesses collect, analyse and exchange large volumes of personal and transactional data. Empirical evidence demonstrates that ethical governance plays a significant role in determining whether digital transformation produces inclusive or exclusionary outcomes. Adams and Akobeng (2021), using

panel data from 46 African countries covering 1984-2018, found that internet use, fixed broadband and mobile subscriptions were associated with reductions in inequality, while governance factors including democracy, regulatory quality, rule of law and political stability strengthened the relationship between ICT development and inequality reduction. This finding suggests that digital infrastructure alone is insufficient to achieve inclusive development; rather, the institutional environment within which digital technologies are deployed is critical. Similarly, Okunola, Rowley and Johnson (2017), examining Nigeria's e-government environment, demonstrated that the digital divide is multidimensional, with differences in access and frequency of use of online public services occurring across different user groups and locations. More recent evidence reinforces this governance argument. Using panel data from 45 developing countries covering 2002–2023, a 2025 study found that digitalisation generally reduced income inequality, but that the strength and direction of this relationship depended on governance quality and the form of digitalisation adopted. Collectively, these findings indicate that ethical governance through transparency, accountability, regulatory quality, fairness and protection of citizens' rights can influence whether digital technologies translate into broader social and economic opportunities. The empirical literature also indicates that digital inclusion requires governance arrangements that actively address the needs of disadvantaged and marginalised groups rather than assuming that technological availability automatically produces inclusion. Suchowerska and McCosker (2021), based on an exploratory survey of 201 programme providers and 19 qualitative interviews within Australia's national digital-literacy programme, found that governance networks can support digital inclusion by combining government

resources with the local knowledge and capabilities of community organisations. Their findings emphasised the importance of balancing standardised resources with customised support and using co-creation to respond to the diverse needs of vulnerable groups. Similarly, Peeters, Miller and Schuilenburg (2025) argue that digital exclusion can occur at different stages of automated government processes and identify practical access, procedural fairness, participation and equitable outcomes as important dimensions of digital government inclusion. Further, Pullen, Ruijter and Meijer (2026), based on empirical testing and validation across multiple public administrations, found that structural, procedural and relational governance mechanisms contribute to the institutionalisation of digital ethics. These findings collectively suggest that ethical governance should be understood not merely as a set of formal principles but as an operational mechanism for ensuring equitable access, meaningful participation, responsible use of data and technologies, and protection of citizens' rights. Consequently, strengthening ethical governance and multi-stakeholder collaboration is essential for converting digital transformation into sustainable and inclusive development, particularly in developing economies and Sub-Saharan Africa.

2.3 Multi-Stakeholder Partnerships

Digital transformation involves actors possessing different resources and capabilities. Governments provide policy and regulatory frameworks; private companies contribute infrastructure, finance and technology; universities and research organisations provide knowledge and skills; civil-society organisations provide community representation; and development partners can provide financing and technical assistance. The AU Digital Transformation Strategy explicitly identifies private-sector and civil-society

participation as important to implementation. Contemporary scholarship also shows that African governments increasingly navigate complex networks of digital partnerships involving national governments, private firms, international organisations and other non-state actors. Soulé (2025), for example, argues that African digital partnerships increasingly involve multiple actors and that governments use partnership diversification to pursue national priorities while navigating asymmetries in digital cooperation. However, the existence of a partnership should not automatically be interpreted as evidence of effective or ethical governance. A partnership can involve many organisations while decision-making remains concentrated among powerful actors. Consequently, this study examines the quality and institutionalisation of participation, rather than simply counting stakeholders. Multi-stakeholder partnerships (MSPs) provide an important institutional mechanism for addressing complex development challenges by bringing together governments, private-sector organisations, civil society, academia, development agencies and local communities to combine resources, knowledge, technical expertise and institutional capabilities. Empirical evidence from Nigeria demonstrates that MSP participation is shaped by stakeholders' interests, relationships and contextual factors. Enechi and Pattberg (2025), using a mixed-method design involving a survey of 115 Nigerian stakeholders participating in SDG partnerships, expert interviews and a participatory workshop, found that stakeholder participation is influenced by relational values and context-specific motivations, suggesting that effective partnerships require meaningful engagement rather than merely formal stakeholder representation. In the digital sector, (Thomas et al., 2023), drawing on interviews, ICT policy documents and stakeholder discussions in Kenya,

found that the multi-stakeholder model contributed to ICT policy development, institutional formation, infrastructure deployment and the diffusion of digital innovations through collaboration between governmental and non-governmental actors. More specifically, Selebi and Mashele (2025), based on interviews with 12 senior telecommunications stakeholders in South Africa, found that MSPs can help address rural digital infrastructure gaps, high costs and regulatory barriers, but their effectiveness depends on strategic communication, early stakeholder engagement, collaborative resource-sharing and simplified regulatory processes. These findings suggest that MSPs can strengthen digital inclusion in Sub-Saharan Africa by coordinating investments in infrastructure, expanding digital skills, improving affordability and ensuring that underserved communities participate in the design and implementation of digital initiatives. However, partnership effectiveness depends on trust, clear responsibilities, equitable participation, effective communication and governance mechanisms capable of managing competing stakeholder interests.

2.4 Gender and Other Dimensions of Digital Inequality

Digital inequality intersects with gender, income, geography, age and education. GSMA's evidence shows that women continue to face significant barriers to mobile-internet use, particularly affordability and digital skills (James 2022; Henshaw, 2023). The effect is that universal connectivity activities cannot be assumed to produce universal inclusion (Ng, Lim & Pang, 2023). Targeted interventions may be necessary to address the specific barriers faced by women, rural communities, low-income households and other less privileged persons. UNESCO's ROAM-X framework incorporates gender and the needs of children and young people as cross-cutting

dimensions, making it suitable for analysing these inequalities (Anapey et al., 2025; Goshu & Ridwan, 2026). Gender remains a significant dimension of digital inequality in developing countries, where women may experience lower levels of access to digital devices, connectivity, digital skills and meaningful technology use because of socioeconomic, educational, cultural and household constraints. Empirical evidence from Rwanda, for example, shows that the gender digital divide persists despite substantial government efforts, with education, domestic responsibilities, socioeconomic conditions, low self-confidence and computer anxiety identified as important barriers to women's ICT access and use (Mumporeze & Prieler, 2017 Singh et al., 2026). Digital inequality, however, extends beyond gender to include income, education, age, employment, geographical location and digital skills. Ono and Zavodny (2007), using comparable microdata from five countries, found systematic differences in IT access and usage across sex, age, education and income groups, demonstrating that digital inequality reflects broader socioeconomic inequalities. Similarly, Nguyen, Hargittai and Marler (2021) found that socioeconomic status, digital skills and prior online experiences shaped people's ability to maintain digital communication during the COVID-19 pandemic, illustrating that simply providing technological access does not guarantee meaningful digital inclusion. From an intersectional perspective, digital inequality therefore occurs through the interaction of multiple social and economic disadvantages rather than through gender alone; women who are simultaneously poor, less educated, unemployed or located in underserved rural communities may face compounded barriers to digital participation (Heeks, Ospina & others, 2021). Consequently, policies for digital inclusion in Sub-Saharan Africa should adopt a multidimensional approach that combines affordable connectivity with digital

skills development, education, economic empowerment and gender-responsive policies.

2.5 Conceptual Framework

The EG-MSP-ROAM-X framework integrates ethical governance and multi-stakeholder partnerships with UNESCO's ROAM-X principles to provide a comprehensive pathway for inclusive digital transformation in Sub-Saharan Africa. At its foundation, ethical governance ensures that digital transformation is guided by transparency, accountability, integrity, fairness, protection of digital rights, responsible use of data and artificial intelligence, and strong institutional capacity. This foundation supports the four core ROAM principles: Rights, which emphasises privacy, freedom of expression, non-discrimination and protection of digital rights; Openness, which promotes open data, interoperability, transparency and accessible digital ecosystems; Accessibility, which focuses on affordable and reliable connectivity, digital devices, digital skills and access for rural, poor and underserved populations; and Multi-Stakeholder Participation, which brings together government, the private sector, civil society, academia, communities and development partners to co-create policies, mobilise resources and implement inclusive digital initiatives. The X (cross-cutting) dimensions ensure that issues such as gender equality, youth inclusion, rural-urban disparities, poverty, trust, cybersecurity, online safety, environmental sustainability and responsible emerging technologies are incorporated across all dimensions of the framework. Through effective multi-stakeholder partnerships, these principles can be translated into practical interventions that mobilise expertise, finance, technology and local knowledge to address context-specific digital challenges. Ultimately, the interaction among ethical governance, ROAM principles, cross-cutting inclusion and collaborative partnerships is

expected to produce inclusive digital transformation outcomes, including greater digital participation, inclusive innovation and entrepreneurship, improved e-government services, employment and economic opportunities, social empowerment and sustainable development. Thus, the framework provides a holistic and context-responsive strategy for bridging the digital divide in Sub-Saharan Africa by ensuring that digital transformation is equitable, participatory, rights-based, ethical and sustainable.

2.6 Research Gap

Existing studies largely focus on infrastructure and literacy but give limited attention to ethical governance and its interaction with multi-stakeholder partnerships in Sub-Saharan Africa (Enechi & Pattberg, 2025; Kpoviessi et al., 2025). There is also a shortage of integrated frameworks and comparative analyses (Issa & El-Fadel, 2025; Ferdousi et al., 2026). Also, indication from existing research and policy discussions provide extensive evidence on connectivity, infrastructure, affordability and digital skills (Lynn et al., 2022; Chong, Puah & Teh, 2026). However, less attention has been given to the interaction between ethical governance and multi-stakeholder partnerships in the implementation of digital-inclusion strategies in Sub-Saharan Africa (Okano-Heijmans & Vosse, 2021; Ntjamba, et al., 2027). Three gaps are particularly relevant. First, infrastructure-centred approaches may understate the role of governance in determining who benefits from digital transformation. Second, partnership approaches may emphasise collaboration without adequately assessing transparency, accountability and participation. Third, there is limited comparative application of

a structured framework capable of examining rights, accessibility, openness, participation and ethical safeguards simultaneously. This study addresses these gaps by applying ROAM-X as an analytical framework consistent with (Fahlevi et al., 2025; Torres-Castillo et al., 2026).

3. Methodology

This study employs a qualitative comparative case-study design, selected for its strength in exploring complex, context-bound phenomena across multiple settings. In a related view by, Kyambade et al. (2026) cases were purposively chosen for regional leadership, documented multi-stakeholder engagement, and verifiable digital inclusion outcomes: Nigeria (West Africa), Rwanda (East/Central), and Kenya (East Africa innovation hub). The source of data for this paper include official policy records such as (NITDA SRAP 2.0, Smart Rwanda Master Plan updates, Konza Strategic Plan 2023-2027), recent reports (GSMA 2025, ITU 2025, AU progress updates), peer-reviewed analyses, and secondary implementation data up to early 2026. Furthermore, thematic analysis focused on governance mechanisms, partnership structures, equity impacts, and outcome metrics (Wang & Ran, 2023). This research depends on secondary sources of resource material to support case study findings (Chen & Tian, 2022; Hamann-Lohmer et al., 2023).

3.1 The Digital Divide in Sub-Saharan Africa

The divide manifests across four interconnected dimensions. Infrastructure and Coverage: Although 86% of the population has mobile broadband access, a 13-15% coverage gap remains, concentrated in rural areas. Affordability: Handset and data costs disproportionately burden low-income households, exacerbating the usage gap of 60%. Skills and Literacy: Digital skills deficits hinder

meaningful use, with gender and rural-urban disparities persisting. Content and Relevance: Limited local-language content and culturally relevant applications compound exclusion, particularly for women, youth in informal sectors, and persons with disabilities. These gaps undermine DE4A targets and risk widening inequalities unless addressed through ethical, collaborative interventions.

3.2 Comparative Case Studies

Nigeria - NITDA's Digital Inclusion Policies (SRAP 2.0) Nigeria's National Information Technology Development Agency (NITDA) leads via the Strategic Roadmap and Action Plan (SRAP 2.0, 2024–2027), aligned with the Renewed Hope Agenda and Ministry of Communications, Innovation and Digital Economy pillars. Key targets include 70% digital literacy by 2027 and 95% by 2030, with 40% female participation and accessibility for persons with disabilities (targeting 35 million). The 774 Local Government Digital Service Spaces program deploys community hubs nationwide, while Digital Literacy for All (DL4ALL) has trained over 480,000 Nigerians across 30 states and the FCT since September 2024. The 3 Million Tech Talents (3MTT) initiative builds global competitiveness through partnerships with NYSC, universities, civil service, and private sector. Multi-stakeholder collaborations with operators and civil society expand affordable access, demonstrating scalable, rights-based inclusion.

Rwanda - Smart Rwanda 2020 Master Plan and Digital Acceleration Project Rwanda's Smart Rwanda 2020 Master Plan integrates seven "SMART" pillars (Agriculture, Finance, Trade & Industry, Health, Education, Government, Women & Youth Empowerment) with enablers in ICT capacity, secure infrastructure, and

governance. Public-private partnerships, including with MTN, have driven near-universal 4G coverage. The US\$200 million Digital Acceleration Project (2022–2026), 55% complete by July 2025, expands broadband, digital public services, and innovation ecosystems. Complementary efforts, such as solar electrification of nearly 1,000 rural schools by end-2025, enhance digital learning. Gender-responsive and participatory planning have accelerated SME digitization and youth employment, positioning Rwanda as a continental model of integrated, ethical digital governance.

Kenya-Konza Technopolis collaborations Konza technopolis, under its 2023-2027 strategic plan, operates as a flagship innovation hub with ten Key Result Areas, including policy frameworks, stakeholder engagement, digital literacy, startup/MSME support, investment attraction, and sustainable city management. Public-private partnerships with Safaricom, global tech firms, and AfriLabs emphasize R&D, incubation, and skills development. Multi-stakeholder governance-encompassing government, private sector, academia, and civil society-ensures inclusive benefits through community outreach, ethical data policies, and alignment with Kenya Vision 2030 and SDGs. Konza advances Kenya's "Silicon Savannah" status while embedding equity in its smart-city platform. Participatory policy design, institutionalize inclusive forums involving marginalized voices in strategy formulation and monitoring. Ethical Safeguards and Adaptive Governance: Embed AU data-protection standards, bias audits for AI/fintech, and cross-border regulatory harmonization. Implementation steps include national digital inclusion funds, annual multi-stakeholder reviews, and alignment with DE4A building blocks. This study employs a qualitative comparative case-study design. Nigeria, Rwanda,

and Kenya were purposively selected for their regional leadership in digital initiatives, documented multi-stakeholder engagement, and availability of policy documentation. Data were drawn from official government documents, GSMA, ITU, and World Bank reports. Thematic analysis focused on ethical governance mechanisms, multi-stakeholder partnership structures, and inclusion digital transformational outcomes. This study focus on comparative case study analysis achieve the main objective of the research and obtain data.

4. Results and Discussion of findings

4.1 Evidence-Based Cross-Case Assessment Using ROAM-X and Ethical Governance

To avoid treating national policy aspirations as evidence of implementation outcomes, the three cases were assessed against observable indicators derived from the ROAM-X framework and the ethical-governance dimensions developed in this study. The assessment distinguishes between documented policy commitments, institutional mechanisms and reported implementation activities (Dlomo & Tshishonga, 2027; Hassan & Naoual, 2024). It does not assume that the existence of a policy or partnership necessarily demonstrates a positive socioeconomic outcome. This distinction is particularly important because the available evidence is predominantly documentary rather than based on primary interviews or independent impact evaluation.

4.2 Nigeria: Institutionalised Digital Inclusion and Stakeholder Collaboration

Nigeria provides evidence of an increasingly institutionalised approach to digital inclusion. The National Information Technology Development Agency's Strategic Roadmap and Action Plan (SRAP 2.0), covering 2024–2027, explicitly identifies inclusive access to digital infrastructure

and services as a strategic pillar. The strategy states that inclusion should address gender, socioeconomic status and geographical location and proposes digital learning centres and innovation hubs, digital infrastructure and services, and greater participation of women in capacity- and skills-development initiatives. From the accessibility dimension of ROAM-X, these commitments provide observable policy indicators beyond general statements about connectivity. SRAP 2.0 specifically proposes establishing digital learning centres and innovation hubs nationwide and includes a target of 40% women's participation in capacity and skills-development initiatives. This provides stronger evidence of an inclusion-oriented policy design than a general claim that Nigeria is promoting digital access. Evidence also exists for the multi-stakeholder dimension. NITDA's Digital Literacy and Capacity Development function explicitly identifies collaboration with public- and private-sector stakeholders as part of its approach to digital literacy and skills development. The agency also describes partnerships and stakeholder engagement as mechanisms for scaling capacity-development activities. The openness and accountability dimensions are reflected in the architecture of SRAP 2.0. NITDA's earlier SRAP established strategic initiatives, implementation plans and results-monitoring frameworks for tracking progress. The current SRAP 2.0 monitoring platform also indicates that impact assessment is being undertaken and that metrics are to be updated as they are verified. This is important because it demonstrates the existence of a monitoring mechanism, but it does not yet constitute independent evidence that the stated targets have been achieved. The rights, privacy and security dimensions are also increasingly incorporated into Nigeria's digital-policy architecture. NITDA identifies strengthening

cybersecurity and digital trust among its strategic priorities, alongside inclusive access, digital literacy and stakeholder collaboration. Accordingly, Nigeria demonstrates an emerging institutional architecture in which accessibility, skills, stakeholder collaboration and digital trust are considered together. However, the evidence does not justify claiming that these measures have already produced specific levels of SME digital adoption or youth employment. The defensible conclusion is that Nigeria has established policy mechanisms and institutional arrangements intended to support inclusive digital transformation, while the magnitude of their socioeconomic effects requires further empirical evaluation.

4.3 Rwanda: Coordinated Digital Inclusion and Institutional Governance

Rwanda provides a contrasting case characterised by strong institutional coordination of digital transformation. The Smart Rwanda Master Plan identifies digital transformation as a mechanism for developing a knowledge-based society and emphasises infrastructure, skills and competencies, innovation and private-sector development. More importantly for the present analysis, Rwanda has developed a National Digital Inclusion Strategy that explicitly identifies several barriers to meaningful digital participation. These include affordability of digital devices and data, awareness and understanding of digital technologies, digital skills, proximity and usability of digital technologies, safety and security, and the institutional environment for digital inclusion and participation. This provides particularly strong evidence for the accessibility component of ROAM-X because the national strategy does not equate digital inclusion with network infrastructure alone. It explicitly recognises affordability, skills, usability and safety as components of inclusion. The strategy also

provides evidence relevant to ethical governance. Safety and security of the public and vulnerable groups are identified as explicit objectives, while the strategy seeks to establish an enabling institutional environment for digital inclusion and participation. These provisions correspond directly with the ethical-governance indicators of equity, protection, responsiveness and institutional accountability proposed in this study. Rwanda's Ministry responsible for ICT also maintains a formal portfolio of national digital strategies, including the National Digital Inclusion Strategy, the Smart Rwanda Master Plan and the country's FinTech Strategy. The existence of these interconnected strategies suggests a coordinated institutional approach rather than isolated digital interventions. Nevertheless, caution is required in interpreting the evidence. The documentation establishes the existence of policy commitments, institutional mechanisms and planned interventions, but it does not by itself demonstrate that all intended inclusion outcomes have been achieved. Therefore, the Rwanda case should be interpreted as evidence of a relatively comprehensive policy architecture for digital inclusion rather than proof of superior performance.

4.4 Kenya: Innovation Ecosystems, Partnerships and Digital Skills

Kenya illustrates a more innovation-oriented model in which public institutions, private enterprises, universities, investors, startups and development actors interact within a broader digital ecosystem. Konza Technopolis, a flagship initiative under Kenya's Vision 2030, provides an important example of this approach. The evidence demonstrates that Konza has established formal mechanisms for partnership. Its partnership portal provides a structured process involving expression of interest, evaluation, agreement on areas of collaboration and memorandum-of-

understanding signing. The portal identifies partners including the Association of Startup and SMEs Enablers of Kenya, Equity Bank, the Kenya National Innovation Agency, KIRDI, NACOSTI and Safaricom. This provides concrete evidence for the multi-stakeholder dimension of ROAM-X. Rather than merely claiming that Kenya promotes public-private collaboration, the case demonstrates an institutional mechanism through which different organisations can participate in the Konza ecosystem. The openness and innovation dimensions are also observable. Konza's Knowledge Economy Center provides incubation and acceleration, mentorship, business support, intellectual-property support and connections to investors and industry actors. It also identifies the Jitume Digital Enablement Programme as a nationwide digital-skills and job-linkage initiative for young people. These activities demonstrate an attempt to connect digital skills with participation in the digital economy. The accessibility and inclusion dimensions are evident in the emphasis on digital skills and job linkages. However, the existence of a programme should not automatically be interpreted as evidence that it has generated a particular number of jobs or eliminated the digital divide. Such claims require programme-level monitoring data and independent evaluation. The partnership and accountability dimensions are further illustrated by Konza's invitation to local and international software vendors to collaborate in providing digital services through its cloud and data-centre ecosystem. The partnership model explicitly includes software providers, startups, infrastructure providers and other technology firms. The case also illustrates how international partnerships can contribute to digital infrastructure and skills development. For example, Kenya and South Korea entered into a financing agreement for the development of a Digital Media City at Konza, incorporating

training institutions, digital enterprises and facilities for gaming, animation, software development and other digital-media activities. Thus, Kenya demonstrates how multi-stakeholder innovation ecosystems can connect infrastructure, entrepreneurship, skills and investment. However, as with Nigeria and Rwanda, the evidence is stronger for institutional arrangements and programme activities than for causal claims about employment or SME outcomes.

4.5 Cross-Case ROAM-X and Ethical-Governance Matrix

The documentary evidence can therefore be synthesised as follows:

ROAM-X / Ethical Governance Dimension		Nigeria	Rwanda	Kenya
1	Rights	Increasing emphasis on digital trust, cybersecurity and responsible digital use	Safety and security of citizens and vulnerable groups explicitly incorporated into digital-inclusion strategy	Data governance and digital security increasingly relevant to expanding digital ecosystem
2	Openness / Transparency	SRAP provides strategic pillars, initiatives and monitoring architecture	Formal national strategies provide policy direction and institutional coordination	Formal partnership and investment processes are publicly specified
3	Accessibility	Inclusive digital infrastructure, learning centres, innovation hubs and digital-skills programmes	Affordability, devices, skills, proximity, usability and safety explicitly addressed	Digital infrastructure, digital skills, innovation hubs and digital-service platforms
4	Multi-stakeholder participation	Government, private-sector and development-partner collaboration documented	State coordination with private and development stakeholders	Formal public-private, academic, investor and startup partnerships
5	Equity and inclusion	SRAP 2.0 explicitly targets geographical, socioeconomic and gender inclusion	National Digital Inclusion Strategy explicitly targets digitally excluded groups and vulnerable populations	Digital-skilling and innovation programmes target youth and broader participation
6	Accountability	Strategic monitoring and impact-assessment mechanisms exist	Institutional strategy and implementation framework established	Formal partnership, investment and programme structures established

7	Privacy/security	Cybersecurity and digital trust form explicit strategic priorities	Safety and security explicitly incorporated into national digital inclusion	Security is integrated into digital infrastructure and technology ecosystem
8	SME/entrepreneurship relevance	SRAP supports innovation, entrepreneurship and digitally enabled MSMEs	Digital transformation linked to private-sector and innovation development	Strong emphasis on startups, innovation, investors and entrepreneurship
9	Youth employment evidence	Employment is an explicit policy objective, but outcome evidence requires further evaluation	Digital inclusion supports participation but specific employment effects require independent evidence	Jitume explicitly connects digital skills with job linkages; specific employment effects should not be inferred without programme data

Source: Author's Survey Synthesis on Official Policy and Institutional Records (2026).

4.6 Discussion of Findings

The comparative findings demonstrate that ethical governance and multi-stakeholder partnerships are complementary mechanisms for advancing inclusive digital transformation in Nigeria, Rwanda and Kenya, although their configurations differ. Using the ROAM-X framework, the evidence shows that all three countries have moved beyond a narrow focus on digital infrastructure towards accessibility, digital skills, participation, safety, institutional coordination and digital trust (Atenaset al., 2026). However, the analysis distinguishes between policy commitments, institutional mechanisms and measurable outcomes. The documentary evidence does not establish that particular policies or partnerships have directly caused improvements in employment, SME digital adoption or socioeconomic inclusion. Rather, it demonstrates the existence of governance structures and implementation mechanisms that create enabling conditions for inclusive digital transformation. Nigeria demonstrates an emerging institutional-coordination model (Babalola, 2021, 2022). NITDA's SRAP 2.0 incorporates geographical, socioeconomic and gender considerations into digital inclusion through digital learning centres, innovation hubs and capacity-development initiatives. The proposed 40% participation target for women provides a measurable inclusion indicator, while public-private collaboration in digital literacy supports the multi-stakeholder dimension of ROAM-X. The emphasis on cybersecurity and digital trust also reflects rights and ethical-governance considerations (Hasan & Kudapa, 2021; Ijeh, 2021).). However, the principal challenge is translating policy commitments and monitoring mechanisms into independently verified outcomes. Nigeria therefore demonstrates considerable policy breadth and institutional coordination, but further evaluation is required

to establish its impact on digital inequality. Rwanda demonstrates a policy-integration model, characterised by a coordinated digital-inclusion architecture (Omweri, 2025). Its National Digital Inclusion Strategy recognises affordability, device access, digital skills, awareness, usability, safety and institutional conditions as interconnected determinants of meaningful digital participation. Its alignment with the Smart Rwanda Master Plan and other digital strategies suggests strong institutional coherence. Attention to safety and vulnerable groups further reflects ethical governance and the multidimensional nature of ROAM-X. Nevertheless, the evidence demonstrates a comprehensive policy architecture rather than proof that Rwanda has achieved superior digital-inclusion outcomes or eliminated affordability and skills barriers. Kenya represents an innovation-ecosystem model, with multi-stakeholder participation institutionalised through Konza Technopolis partnerships involving government, financial institutions, universities, innovation agencies, telecommunications firms, startups and development actors (Langa,et al., 2025). Incubation, acceleration, mentorship, investor connections and the Jitume Digital Enablement Programme demonstrate efforts to connect digital skills, entrepreneurship and employment. However, evidence remains stronger for institutional mechanisms and programme activities than for independently verified socioeconomic outcomes. Thus, Kenya illustrates the potential of partnership-oriented digital ecosystems without establishing causal superiority over the other cases. The cross-case analysis indicates that no single governance model is universally superior. Inclusive digital transformation depends on combining accessibility, openness, rights protection, participation, accountability and attention to vulnerable groups (Liandoet al., 2026). Multi-

stakeholder partnerships can provide financial, technical and innovation resources, but their effectiveness depends on ethical governance arrangements that ensure transparency, accountability, equity and protection of digital rights. The findings therefore support the proposed EG-MSP-ROAM-X framework, in which ethical governance provides the institutional foundation and multi-stakeholder partnerships provide the collaborative mechanism for translating ROAM-X principles into inclusive digital initiatives. The evidence suggests that bridging the digital divide in Sub-Saharan Africa requires a shift from technology-centred digitalisation towards governance-centred and partnership-enabled digital transformation. Future research should employ longitudinal data, stakeholder interviews and independent programme evaluations to determine whether these institutional arrangements produce measurable reductions in digital inequality, particularly among women, rural communities, young people, persons with disabilities, SMEs and other underserved groups.

5. Conclusion

5.1 Practical/Managerial Implications

The findings imply that managers and organisational leaders should treat digital inclusion as a strategic responsibility rather than merely an ICT function. Organisations should integrate affordable digital access, digital skills, gender inclusion, cybersecurity, privacy and responsible technology use into their digital-transformation strategies. They should also strengthen partnerships with government, technology firms, universities, SMEs and civil society to share resources, expertise and innovation capabilities.

5.2 Policy Implications

The findings suggest that governments should move beyond infrastructure-focused digitalisation towards inclusive and ethical

digital transformation. Policies should address affordability, digital skills, gender and rural–urban inequalities, data protection, cybersecurity and meaningful participation. Governments should also institutionalise multi-stakeholder platforms and establish measurable indicators for monitoring digital-inclusion outcomes, particularly among underserved populations.

5.3 Social Implications

The findings have significant social implications because inclusive digital transformation can improve access to education, healthcare, financial services, employment opportunities, public services and social participation, particularly for underserved communities. Strengthening ethical governance and multi-stakeholder partnerships can help reduce digital inequalities associated with gender, income, geography, age and digital skills, while promoting greater participation of women, youth, rural populations and other marginalised groups in the digital economy. However, digital inclusion must also address privacy, cybersecurity, online safety and responsible technology use to ensure that digital transformation strengthens social trust and empowerment rather than creating new forms of exclusion or vulnerability.

5. Limitation and future Research Directions

This paper has three basic limitations. Firstly, it depends on documentary evidence, which originated from governments records and institutional providers, sources valuable for creating policy obligations and operation structures but may not provide autonomous appraisals of programme value. Secondly, this paper conducted a comparative analysis study consisting of three purposively chosen cases rather than a demonstrative sample of Sub-Saharan African nations. The findings therefore are being interpreted analytically rather than

statistically generalised. Thirdly, this study does not adopt a counterfactual case. As a result, it cannot ascertain whether multi-stakeholder initiative gives better results than siloed approaches. Also, future researches may incorporate opposing cases, longitudinal proof and measurable result indicators. Again, future studies may specifically investigate the influence of digital governance on technology adoption SMEs; gender variances in digital skills and meaningful usage; the link that exist between digital-skills programmes and youth empowerment; the efficiency of universal-service funds; privacy and cybersecurity within the digital trust; AI governance and new technologies; and comparative performance analysis of diverse collaborative models.

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