

Shaping Data Governance and Advancing Digital Inclusion in Africa: Pathways for Sustainable Development

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Abstract

This paper critically examines the evolving landscape of data governance in Africa, with particular emphasis on its intersection with digital inclusion and sustainable development. Drawing on policy frameworks, institutional practices, and expanded case evidence particularly from Nigeria where the study interrogates structural challenges such as policy fragmentation, infrastructural deficits, limited human capacity, and trust deficits, while also addressing critical power dynamics including data colonialism, corporate capture, and surveillance risks. The paper adopts a qualitative analytical approach with explicit document selection criteria and thematic analysis, for synthesizing continental frameworks such as the African Union Data Policy Framework 2022 and national regulatory developments, particularly Nigeria's Data Protection Act 2023. It further explores the evolving role of libraries and information professionals as key actors in fostering ethical data ecosystems, promoting digital literacy, and ensuring equitable access to information. Findings reveal that effective data governance is indispensable for bridging the digital divide and enabling inclusive participation in the digital economy. The study proposes a multi-dimensional framework for strengthening data governance in Africa, including policy harmonization, institutional capacity building, infrastructure investment, community-centered approaches, and critical safeguards against data exploitation. It concludes that a values-driven, inclusive data governance model is essential for achieving Africa's development aspirations under Agenda 2063 and the Sustainable Development Goals.

Keywords: Africa, Data governance; Digital inclusion; Sustainable development; Libraries; Digital transformation

1. Introduction

The rapid expansion of digital technologies has fundamentally transformed the global socio-economic landscape, positioning data as a central driver of innovation, governance, and development. In what is often described as the "data economy," nations that effectively harness data resources are better positioned to achieve sustainable growth and global competitiveness (United Nations Economic Commission for Africa [UNECA], 2023).

In Africa, the digital transformation trajectory is marked by both significant opportunities and persistent inequalities. While mobile penetration and internet access have increased considerably, access to digital resources remains uneven, particularly among rural populations, women, and marginalized communities (African Union, 2020). Internet penetration in Africa stands at approximately 28–30%, with significant rural–urban and gender disparities (International Telecommunication Union [ITU], 2023). This disparity underscores the urgent need for inclusive frameworks that ensure equitable participation in the digital ecosystem.

Data governance has emerged as a critical mechanism for addressing these challenges. It encompasses the policies, standards, and institutional arrangements that regulate data collection, storage, processing, and use. Effective data governance ensures that data is managed responsibly, ethically, and securely, thereby fostering trust and enabling innovation (UNESCO, 2021).

This paper examines the nexus between data governance and digital inclusion in Africa, with a particular focus on Nigeria. It addresses three research questions: (1) how do governance frameworks shape digital inclusion outcomes in Africa? (2) What structural and power-related challenges impede inclusive data ecosystems? (3) What strategic pathways, especially involving libraries and information professionals can advance inclusive, values-driven data governance?

The study makes three contributions: (a) a synthesized policy landscape enriched with empirical case evidence; (b) a multi-dimensional framework integrating critical safeguards against data exploitation; and (c) Nigeria-centered analysis with actionable recommendations for policymakers, libraries, and development partners.

Method of the study

This study adopts a qualitative, exploratory research design based on document analysis and policy review with explicit methodological rigor. The document Selection Criteria includes:- Sources: African Union policy documents; national data protection laws (e.g., Nigeria Data Protection Act, 2023; Kenya Data Protection Act, 2019; South Africa POPIA, 2013); reports from UNESCO and UNECA; scholarly literature on data governance and digital inclusion. - Date range: 2010–2025 (to capture foundational and recent policy developments). - Inclusion criteria: Documents directly addressing data governance, digital inclusion, data sovereignty, cross-border data flows, or library/information professional roles in Africa.- Exclusion criteria: Non-African focused documents without policy relevance to Africa; opinion pieces without empirical or policy basis.

Analytic Approach

The analytical approach involves thematic analysis, focusing on key dimensions such as governance frameworks, infrastructural capacity, institutional roles, inclusion strategies, and critical power dynamics. Coding followed an iterative process: initial coding based on predefined dimensions → refinement through re-reading → cross-checking against case evidence. A second-reader cross-check was performed on a subset of documents to enhance reliability. Manual coding was used (no specialized software).

Limitations

This study does not include primary data collection; findings depend on document quality and availability. Case evidence is drawn from secondary sources and may not capture all contextual nuances.

Literature Review

Conceptual Foundations of Data Governance

Data governance is broadly defined as the exercise of authority and control over the management of data assets (Khatri & Brown, 2010). It involves the establishment of policies, procedures, and standards that ensure data quality, security, and usability.

Scholars have emphasized that data governance extends beyond technical management to include ethical considerations, accountability mechanisms, and stakeholder engagement (Janssen et al., 2020). In the African context, data governance must also address issues of data sovereignty, equity, and inclusion.

Digital inclusion refers to the ability of individuals and communities to access and effectively use digital technologies. According to Warschauer (2004), digital inclusion encompasses not only physical access but also skills, literacy, and meaningful engagement.

Recent studies highlight that digital inclusion is a prerequisite for socio-economic participation in the digital economy (Van Dijk, 2020). In Africa, digital inclusion is closely linked to development outcomes, including education, healthcare, and governance.

Theoretical Framework

The Capability Approach Integrated

This study is anchored on the Capability Approach Theory of Sen, 1999 which emphasizes the importance of expanding individuals' capabilities to achieve meaningful participation in society. Data governance, in this context, is viewed as an enabling framework that enhances individuals' capabilities by ensuring equitable access to information and digital resources.

Critically, this study integrates perspectives on **data colonialism** (Hayles, 2019, 2022), which examines how extractive data practices can subordinate local agencies and reproduce global

power asymmetries. It also addresses corporate capture—where dominant technology platforms control data flows and profit asymmetries and surveillance risks associated with digital identity and public data systems. This integrated framework allows for a more nuanced analysis of governance challenges beyond technical and policy dimensions.

The African Data Landscape

Africa's data ecosystem is characterized by rapid growth and structural complexity. The expansion of mobile technologies and digital platforms has created new opportunities for data generation and utilization. However, several challenges persist:

Challenge	Description
Limited data infrastructure and storage capacity	Reliance on foreign cloud providers; inadequate local data centers
Weak regulatory frameworks	Fragmented or non-existent data protection laws in some countries
Dependence on foreign technology providers	Geopolitical asymmetries in technology access and control
Low levels of data literacy	Shortage of skilled professionals in data science and cybersecurity
Cross-border data flow asymmetries	Lack of harmonized standards complicates regional integration

The African Union Data Policy Framework (2022) emphasizes the need for data sovereignty, interoperability, and innovation. However, implementation remains uneven, resulting in fragmented data ecosystems across the continent (African Union, 2022).

Data Governance and Digital Inclusion Nexus

Data governance and digital inclusion are mutually reinforcing. Weak governance structures can exacerbate inequalities, while robust frameworks promote equitable access and participation.

Effective data governance supports digital inclusion by protecting user rights and privacy, enhancing trust in digital systems, promoting equitable access to data resources, and enabling evidence-based policymaking. Conversely, digital inclusion strengthens data governance by increasing citizen participation and accountability.

Critical perspective: Governance frameworks must guard against data colonialism and corporate capture where external actors extract data with minimal local benefit and address surveillance risks in digital ID and public data systems. Without these safeguards, governance interventions may inadvertently reproduce extractive power dynamics.

Challenges to Data Governance in Africa

Policy Fragmentation

Many African countries lack comprehensive and harmonized data governance frameworks, leading to regulatory inconsistencies.

Infrastructural Deficits

Limited broadband access, unreliable power supply, and inadequate data centers hinder digital development.

Capacity Constraints

There is a shortage of skilled professionals in data science, cyber security, and data governance.

Trust Deficit

Public mistrust in government institutions undermines participation in digital initiatives.

Cross-Border Data Issues

The absence of harmonized standards complicates data exchange and regional integration.

Critical Power Dynamics

- Data colonialism: Extractive data practices subordinate local agency and reproduce global asymmetries (Hayles, 2019, 2022).
- Corporate capture: Dominant platforms control data flows and profit asymmetries, limiting local value capture.
- Surveillance risks: Digital ID and public data systems may enable overreach without adequate privacy safeguards and independent oversight.

Emerging Frameworks and Best Practices

Several African countries are making progress:

Country	Framework	Year
Nigeria	Nigeria Data Protection Act	2023
Kenya	Data Protection Act	2019
South Africa	Protection of Personal Information Act (POPIA)	2013

Continental initiatives such as the African Union Digital Transformation Strategy (2020–2030) and Smart Africa Alliance provide a framework for harmonization (African Union, 2020; Smart Africa Alliance, 2023). However, stronger implementation mechanisms and critical safeguards are needed.

Libraries and Information Professionals

Libraries play a critical role in advancing data governance and digital inclusion. They serve as access points for digital resources, centers for digital literacy training, advocates for ethical data use and custodians of research data. Their role is particularly significant in bridging the digital divide in underserved communities.

Challenges for Libraries

Libraries face several constraints: Lack of institutional data governance policies, inadequate infrastructure (broadband, devices, power), skills gaps in data management, privacy, and cyber security, ethical and legal uncertainties regarding data handling.

Strategic Responses

To address these challenges, libraries should:

1. Develop data governance frameworks aligned with national laws (e.g., Nigeria Data Protection Act, 2023)
2. Invest in capacity building (staff training in data management, privacy, cyber security)
3. Promote digital literacy (community programs, targeted outreach to women and rural populations)
4. Strengthen research data management (repository policies, metadata standards)
5. Foster partnerships (government, donors, private sector, AU/Smart Africa)
6. Embed critical safeguards (privacy-by-design, transparent consent, limits on surveillance)

Nigerian Case Studies

Nigeria Data Protection Act (2023)

The Nigeria Data Protection Act established a national framework for data protection, creating compliance obligations for organizations. Potential benefits include enhanced trust and rights protection if enforcement is robust.

Gap: Capacity for enforcement and public awareness remains limited.

National Digital ID (NIN) Program

Nigeria's large-scale digital identity initiative (National Identity Number) has integration efforts across services. **Benefits:** Improved service delivery and reduced fraud.

Risks: Surveillance concerns, data security vulnerabilities, inadequate consent mechanisms, and potential exclusion of marginalized groups if safeguards are weak.

Need: Transparent governance, independent oversight, and strong privacy protections.

National Library Digitization Initiatives

The National Library's digitization of archival and bibliographic materials improves access and preservation. ****Challenges:** ** Infrastructure, funding, metadata standards, and sustainable hosting. ****Opportunities:** ** Partnerships for infrastructure and capacity building.

Academic Repositories

Institutional repositories support research data management and open access. Challenges include: Inconsistent policies, limited metadata quality, and sustainability concerns; while the opportunities are Library-led standardization and training.

Public Library Digital Literacy Initiatives

Community programs improve skills and access. Targeted outreach can reduce gender and rural gaps. Needs include funding, infrastructure, and trainer capacity.

Contextual Metrics (Nigeria)

The internet penetration in Nigeria is approximately 50–55%, with rural–urban and gender disparities (ITU, 2023), mobile broadband is expanding but power instability affects reliability and the data literacy remains low; library-led programs can address this gap.

Pathways for Inclusive Data Governance (Actionable)

Strategy	Key Actions	Responsible Actors	Timeline
Policy harmonization	Align national laws with AU framework; establish cross-border data flow standards	Governments, AU	Years 1–2
Capacity building	Train professionals in governance, cyber security, data science; library-led programs	Libraries, universities, donors	Years 1–3
Infrastructure investment	Data centers, broadband expansion, power reliability; public–private partnerships	Governments, private sector, donors	Years 1–4
Public–private partnerships	Leverage tech firms for infrastructure and literacy programs with accountability	Private sector, governments	Years 1–4
Community engagement	Localized outreach, participatory design, feedback mechanisms	Libraries, NGOs, communities	Ongoing
Critical safeguards	Privacy-by-design, transparent consent, independent oversight for ID/surveillance systems, anti-extractivism clauses	Governments, regulators, civil society	Years 1–3

Conclusion

Data governance is central to Africa's digital transformation and sustainable development. Without inclusive governance frameworks, digital technologies risk deepening inequality. Libraries and information professionals play a vital role in promoting ethical, inclusive, and accessible data ecosystems. By fostering digital literacy, advocating policy reform, and ensuring equitable access, they contribute significantly to sustainable development. A values-driven approach to data governance anchored on equity, accountability, human dignity, and critical safeguards against data exploitation is essential for achieving Africa's development goals under Agenda 2063 and the Sustainable Development Goals.

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