Enforcement Gaps in AI-for-Health Governance: A Comparative Analysis of
Kenya and Ghana

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How do governance frameworks for AI in health differ in their enforcement mechanisms in Kenya and Ghana, and how do these differences affect the effectiveness of AI integration within their health systems?

I. ABSTRACT

Despite growing innovation for artificial intelligence (AI) in global health, the capacity of governments to enforce responsible, equitable, and safe AI deployment varies widely. This paper examines how governance frameworks for AI in health differ in their enforcement mechanisms in Kenya and Ghana, and how these differences shape implementation outcomes within their health systems. While both countries possess digital health strategies, data protection laws, and emerging AI governance initiatives; persistent fragmentation, driven by fiscal constraints, donor dependencies, overlapping mandates, and insufficient institutional coordination, weakens operational enforcement.

Using a qualitative comparative policy analysis, the paper reviews policy documents, legal frameworks, and scholarly literature to identify three enforcement determinants shaping enforcement outcomes in AI governance: regulatory authority, institutional coordination, and fiscal–administrative capacity. The analysis shows that Kenya exhibits relatively stronger continuity in digital health leadership and more consistent integration of AI governance within broader digital health agendas. Ghana, once recognized as a cohesive governance environment for health innovation, has experienced a recent decline in regulatory enforcement due to severe financial pressures, reduced autonomy, and increasing donor-driven projectization, resulting in overlapping and sometimes invisible implementations.

The paper argues that enforcement is not simply a technical administrative function but is shaped by structural, political, and economic factors. Enforcement mechanisms are significantly weakened when ministries lack fiscal autonomy, when donor priorities override national strategies, and when institutional fragmentation creates "noise," duplication, and limited state visibility into ongoing AI or digital health projects. These governance gaps have direct implications for equity, safety, accountability, and long-term sustainability of AI in health systems.

II.   INTRODUCTION

AI is increasingly positioned as a transformative tool for strengthening health systems, improving diagnostic accuracy, enhancing surveillance, and addressing workforce shortages. Governments across Low- and Middle-income countries (Hereinafter: LMICs) and high-income countries (Hereinafter: HICs) alike have adopted policy documents, strategies, and legal frameworks intended to guide the ethical and responsible use of AI in health. Yet the effectiveness of these governance structures depends not only on the presence of frameworks but also on the ability of states to enforce them. Enforcement is therefore central to understanding how AI technologies shape health outcomes, especially in contexts where institutional capacity, fiscal autonomy, and donor involvement vary significantly.

1.1. Research Question and Argument

While global AI governance debates often focus on standards, principles, and normative guidelines, implementation challenges remain understudied, particularly in LMICs where fragmented institutional landscapes complicate regulatory authority. Limited, if any, research has been done on ascertaining the current AI regulatory enforcement landscape. This paper examines how governance frameworks for AI in health differ in their enforcement mechanisms in Kenya and Ghana, asking: How do these differences shape the effectiveness of AI integration within their health systems?

This paper contends that the enforcement of AI in the health sector transcends mere legal compliance, representing instead a complex function of three interdependent factors: (1) regulatory authority, which define the mandates for approving, monitoring, and sanctioning AI tools; (2) institutional coherence and coordination, reflected in the collaborative dynamics and shared oversight mechanisms among health, ICT, innovation, and data protection bodies; and (3) fiscal and administrative capacity, encompassing budgeting, staffing, technical expertise, and autonomy from external influence. In Kenya, enforcement benefits from stable institutions but lacks focused oversight. In Ghana, regulatory frameworks include broad mandates and ambitious structures, but have limited capacity and weak coordination making effective implementation difficult. Collectively, these determinants enable or impede several key health system outcomes: the effective implementation of national strategies, the risk assessment of AI systems, the ability of ministries to track innovations within the health system, and the operationalization of fundamental ethical and privacy protections in clinical settings.

1.2. Case Selection: Kenya and Ghana

Kenya and Ghana present compelling comparative cases for a threefold analysis. Firstly, both countries have established foundational governance structures, including data protection

laws, national digital health strategies, and nascent AI policy initiatives. Secondly, both are deeply integrated into the transnational donor ecosystem. The third, and most critical for comparison, is their divergent institutional trajectory: while Kenya has moved toward greater consolidation of digital health leadership, Ghana has experienced a marked decline in regulatory coherence, attributable to fiscal pressures, donor influence, and internal fragmentation. This divergence creates a quasi-experimental context for examining how institutional structures ultimately shape regulatory enforcement.

Emerging evidence also positions coordination not as an enforcement mechanism per se, but as a critical determinant of its effectiveness. This is particularly acute in LMIC's, where regulatory agencies are often under-resourced and mandates are fragmented across multiple ministries. In such contexts, a lack of coordination results in operational inefficiencies, including duplication of effort, contradictory guidance, and poor visibility into the broader ecosystem of digital health actors. Evidence from implementers, such as a respondent from Grand Challenges Canada, indicates that in Ghana, this fragmentation has reached a point where innovators must engage with numerous ministries repeatedly, yet their work fails to be formally recognized or registered across government entities.[1] Consequently, even where AI and digital health frameworks exist de jure, de facto enforcement falters due to inconsistent communication, frequent leadership turnover, and fiscal pressures that erode the autonomy of regulatory bodies.

A key insight emerging from this review is the paradox that declining resources may create opportunities for improved enforcement. As funding decreases, governments are increasingly forced to prioritize, consolidate responsibilities, and reduce duplication. In Ghana, financial strain has exposed inefficiencies in governance structures and may serve as a catalyst for more coherent enforcement practices. Kenya's relatively more stable environment highlights the importance of continuity in leadership and political support in strengthening enforcement capacity.

1.3. Paper Contributions and Methodology

This paper makes three contributions. First, it synthesizes existing literature on AI governance and health system regulation in Kenya and Ghana identifying country-specific (sui generis) enforcement patterns. Second, it offers a structured comparative analysis of Kenya and Ghana's enforcement architectures, by mapping the regulatory landscape in proximate legal domains critical to AI in health, such as data protection and digital health, thereby moving beyond theoretical gaps to an empirical evaluation of AI oversight. Third, it evaluates whether, and to what extent, the actual policy responses in Kenya and Ghana address the governance constraints identified in the literature. This evaluation proceeds by examining the role of

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[1] Internal commentary from development practitioner, Grand Challenges Canada, 2025.

relevant regulatory authorities to determine how their enforcement capacities, as revealed through budgets, coordination structures, and operational practices; shape the implementation of legal frameworks and, consequently, the effectiveness of AI integration within their respective health systems.

The remainder of this paper proceeds as follows. Section II presents the literature review, beginning with an overview of global AI governance norms before examining regulatory constraints in LMIC health systems, the digital health to AI governance continuum, and identifying enforcement gaps and differences. Section III then delivers the policy response analysis, comparing Kenya and Ghana across three enforcement determinants: regulatory authority, institutional coordination, and fiscal and administrative capacity. Section IV concludes by synthesizing the findings and reflecting on the implications for AI integration in health systems.

III.   LITERATURE REVIEW

2.1. Global AI Governance Norms: Principles vs. Practice

A key debate in global AI governance is the efficacy of principles-based approaches. While international bodies such as the OECD and UNESCO have established a consensus around core tenets such as, transparency, fairness, accountability, yet this "soft law" foundation remains largely symbolic.[2] The fundamental schism lies in whether this approach represents a pragmatic adaptation to technological uncertainty or a fundamental failure of regulatory will. Proponents frame high-level principles as a necessary first step, while critics argue that principles without enforcement reproduce a familiar "form without function" dynamic, what Andrews, Pritchett, and Woolcock call *isomorphic mimicry*, where states adopt the appearance of compliance without the capacity for implementation. [3] This principles-practice schism is acutely visible in African scholarship, which critiques an "implementation gap of global AI ethics, where transnational frameworks remain symbolic without localized enforcement. The direct transplantation of Western models is widely seen as untenable, as they frequently ignore African socio-economic realities, institutional capacities, and cultural contexts.[4] Abebe et al. further argue that African data governance is structured by deep power asymmetries, enabling *algorithmic colonialism* in which AI norms and systems are imported without meaningful capacity to regulate them.[5] This is compounded by civic tech research showing that a reliance on complaint-driven enforcement mechanisms places disproportionate burden on citizens rather

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[2] UNESCO, Recommendation on the Ethics of Artificial Intelligence (2021).

[3] Matt Andrews, Lant Pritchett, and Michael Woolcock, Escaping Capability Traps (2013), 2–7

[4] Damian Okaibedi Eke, Kutoma Wakunuma, and Simisola Akintoye, "Challenges and Opportunities," in Responsible AI in Africa, 181-82.

[5] Abebe, Rediet et al. "Algorithmic Colonialism." In Responsible AI in Africa, 171–194.

than the state.[6] The literature indicates that without regulatory bodies capable of monitoring and sanctioning AI systems, these frameworks and principles risk serving as window dressing rather than tools of accountability.

2.2. Governance Constraints Shaping Regulation: Capacity, Fragmentation, and Donor Influence

The literature on health governance in LMICs consistently identifies a critical disjuncture: regulations are often strong in principle but weak in practice. A recent PRISMA-based review of eHealth policy frameworks across LMIC's highlights common obstacles: fragmented health information systems, diverse facility ownership structures (public, private, donor-funded), and very weak enforcement mechanisms even where legislation exists.[7] The central question, therefore, is not whether this gap exists, but why these well-designed frameworks falter. A recurring trend is that while countries like Kenya enact comprehensive digital health strategies, their implementation is routinely hampered by institutional fragmentation and donor-driven parallel systems. Ghana exhibits a similar pattern: the Ghana Health Service (GHS) digital health strategy relies heavily on donor-funded projects, which create parallel data systems and reduce incentives for domestic oversight. This dynamic exemplifies the *capability trap*, whereby states adopt sophisticated regulatory forms but lack the bureaucratic capability to enforce them.[8] Attempts in digitalization in Ghana and comparable LMICs reinforces this, showing that weak institutional incentives, low IT capacity, and bureaucratic silos consistently undermine digital governance.[9] Research on national eHealth rollout efforts finds inconsistent integration between Ghana Health Service (GHS) platforms and donor-built systems, resulting in fragmented patient records and lost clinical continuity.[10]

Empirical evidence demonstrates that while donor-funded projects are indispensable for infrastructure and technical expertise, their modus operandi frequently creates parallel implementation structures that circumvent domestic oversight.[11] A recent case study from Zanzibar demonstrates that these governance challenges are not just theoretical: efforts to collect and manage patient data for AI applications repeatedly clash with weak institutional capacity,

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[6] R. Shayamunda and J. Bhanye, "Digital Democracy in Action," in Digitalisation and Public Policy in Africa, 188.

[7] Mengiste, S.A., Antypas, K., Johannessen, M.R. et al. eHealth policy framework in Low and Lower Middle-Income Countries; a PRISMA systematic review and analysis. BMC Health Serv Res 23, 328 (2023). https://doi.org/10.1186/s12913-023-09325-7

[8] Andrews, Matt, Lant Pritchett, and Michael Woolcock. Escaping Capability Traps: How to Build Better Institutions in Weak States. 2013.

[9] World Bank, World Development Report 2016.

[10]

[11] Jeremy Shiffman, "Donor Funding Priorities for Communicable Disease Control in the Developing World," Health Policy and Planning 21, no. 6 (2006): 411-420.

poor consent mechanisms, and fragile data-management infrastructure.[12] This dynamic, as scholars note, generates "islands of success" where project-specific outcomes are achieved at the cost of weakening the state's long-term oversight capabilities.[13] The relevance of the Zanzibar case for Kenya and Ghana lies in its illustration of a common syndrome. Like Zanzibar, both countries host a multitude of donor-funded digital health pilots. These projects, while well-intentioned, often establish their own unique data standards, consent forms, and technology platforms. This creates a landscape of incompatible systems, a direct parallel to the fragmentation observed in Kenya, where a systematic review of digital health initiatives in Kenya not only confirms pervasive fragmentation but reveals a fundamental deficit: a lack of rigorous evaluations, with only a minority of initiatives formally assessed. The governance failures documented in Zanzibar foreshadow a tangible risk for Ghana, whose donor-reliant digital health strategy mirrors the former's approach and could therefore succumb to the same pattern of fragmentation. The "islands of success" model means that even if a single AI project in a particular region or hospital succeeds, its data and model cannot be easily scaled or integrated into the national health infrastructure. This exemplifies the World Health Organization's similar conclusion that digital health interventions succeed only where enabling environments, including governance, interoperability, infrastructure, and workforce capacity, are firmly established.[14] The critical insight, therefore, is that a strong statutory framework is a necessary but insufficient condition for effective governance. Effective governance depends on the endogenous capacity of the state to coordinate, monitor, and enforce regulations. Amnesty International's assessment of Kenya's data protection regime similarly illustrates this gap: comprehensive statutes are routinely neutralized by weak enforcement, demonstrating broader observations that governance quality is often mismeasured by form rather than function.[15] In sum, this literature shows that AI integration in LMIC's remains nascent, partial, and under-resourced.

2.3. The Digital Health to AI Governance Continuum

A growing body of research emphasizes that AI governance in LMICs is not emerging as a discrete regulatory field but is instead layered onto existing digital health and data protection foundations.[16] This path-dependent evolution means that countries such as Kenya inherit both the capabilities and limitations embedded in earlier digital governance structures. Oversight of AI-enabled tools is therefore mediated through frameworks originally designed for general data

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[12]Li, Tracey, Abbas Wandella, Richard Gomer, and Mohamed Habib Al-Mafazy. "Operationalizing Health Data Governance for AI Innovation in Low-Resource Government Health Systems: A Practical Implementation Perspective from Zanzibar." Data & Policy 6 (2024): e63.

[13] Martin Njoroge et al., "Assessing the Feasibility of eHealth and mHealth: A Systematic Review and Analysis of Initiatives in Kenya," BMC Research Notes 10, no. 90 (2017): 6-9.

[14] World Health Organization. Global Strategy on Digital Health 2020–2025. Geneva: WHO, 2021

[15] Amnesty International. Kenya: The Data Protection Act—Strengths, Gaps, and Opportunities for Reform. London: Amnesty International, 2022; Fukuyama, Francis. (2016). Governance: What Do We Know, and How Do We Know It?. Annual Review of Political Science. 19. 10.1146/annurev-polisci-042214-044240.

[16] Deo Shao et al., "Bridging the Gap: A Comparative Analysis of Data Protection Regulations in East African Countries," Digital Policy, Regulation and Governance 27, no. 4 (2025): 492–94.

management, not for algorithmic decision-making. As scholars note, this layering entrenches systemic weaknesses: fragmented digital health systems, uneven interoperability, donor-driven architectures, and limited technical expertise.[17] Kenya's Data Protection Act and eHealth policy illustrate this continuum: they offer formal protections yet lack mechanisms for algorithmic auditability, risk classification, or system-level monitoring.[18] Ghana shows a comparable pattern, with its data protection and cybersecurity acts, emphasizing privacy rights but lacking AI-specific monitoring or compliance protocols.[19] Evidence suggests that without deliberate regulatory adaptation, AI may amplify existing inequities by automating errors already present in digital health infrastructures rather than correcting them.[20]

2.4. The Enforcement Mechanism Gap

Across this literature, the most persistent blind spot concerns the operational mechanics of enforcement. While scholars describe governance deficits: principles–practice gaps, institutional fragmentation, and limited bureaucratic capacity, there is little empirical analysis of how regulators actually investigate, audit, or sanction AI systems.[21] What is missing are studies analyzing how budget constraints shape monitoring capabilities, how inter-agency coordination occurs between health, ICT, and procurement authorities, or how regulators exercise discretion when confronting proprietary algorithms.[22] This gap is particularly salient in LMICs, where data protection authorities serve as de facto AI regulators despite limited technical resources.[23] Existing Kenyan documentation acknowledges frameworks but provides almost no insight into enforcement practice.[24] Ghana faces similar gaps: the Data Protection Commission technically has enforcement powers, but its human resource constraints limit systemic oversight, particularly for AI-driven health applications.[25] Consequently, this policy analysis addresses the "enforcement mechanism deficit" by examining how Kenya and Ghana translate formal protocols and legislation into, or fail to translate them into; operational accountability. Further, while the literature establishes that fragmentation and capacity limitations erode digital and AI governance, no study to date compares how these constraints diverge between two structurally similar LMICs, nor how these divergences shape AI enforcement specifically in healthcare.

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[17]Martin Njoroge et al., "Assessing the Feasibility of eHealth and mHealth: A Systematic Review and Analysis of Initiatives in Kenya," BMC Research Notes 10, no. 90 (2017): 6-9.
[18] Republic of Kenya, Data Protection Act, No. 24 of 2019 (Nairobi: Government Printer, 2019); Ministry of Health, Kenya National eHealth Policy 2016–2030 (Nairobi: Ministry of Health, 2016).
[19] Ghana. Data Protection Act, 2012.17; Cybersecurity Act, 2020; Ministry of Communications and Digitalisation, Republic of Ghana, *Ghana Digital Economy Policy & Strategy: A Digital Ghana for All (2024-2028).
[20] Amnesty International Kenya, Data Protection Report (Nairobi. 2021), 23.
[21] Shao et al., "Bridging the Gap," 493.
[22] Amnesty International Kenya, Data Protection Report, 17-18.
[23] Amnesty International Kenya, Data Protection Report, 6.
[24] Office of the Data Protection Commissioner, Annual Report 2021–2022 (Nairobi: ODPC, 2022).
[25] Ghana Data Protection Commission, 2021

Scholars have established that weak enforcement is not a theoretical concern but a measurable determinant of patient harm. Without enforceable requirements for algorithmic auditability, bias testing, or clinical validation, risks manifest along three pathways: (1) diagnostic error, often resulting from uncalibrated models trained on non-African clinical data;[26] (2) triage inequity, where AI reproduces gendered and racial disparities embedded in historical health records;[27] and (3) privacy failure, including re-identification of patient imaging datasets through unsecured storage systems in Kenya and Nigeria.[28] Although these studies do not directly focus on Kenya and Ghana, their regulatory parallels indicate credible and foreseeable risk trajectories in both countries, particularly where authorities lack resources to mandate such monitoring.

Together, the literature suggests that enforcement failures follow a three-stage mechanism:

Table I. Literature-Based Mechanisms of AI Governance Enforcement in Kenya vs Ghana

Structural Constraint →	Enforcement Weakness →	Result in AI Deployment (Literature based)
Underfunded regulators/weak institutional capacity	Kenya •Agencies developing but capacity-limited² • Limited auditing skills; early-stage data governance	Kenya • AI may enter health systems without systematic review; privacy & reliability risks
	Ghana • Structurally stretched; chronic resource & staffing gaps • Weak ICT capacity	Ghana • AI adoption may bypass oversight; higher risk of errors; uneven deployment
Fragmented institutional mandates and siloed governance	Kenya • Partial coordination; fragmentation across health, ICT, and data protection	Kenya • Inconsistent AI implementation; parallel platforms; weak cross-sector applications
	Ghana • Deep fragmentation; multiple unaligned institutions • Pilot projects rarely integrate nationally	Ghana • Uneven AI adoption; limited national integration; gaps in monitoring/data quality

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Donor dependency and parallel innovation pipelines[29]	Kenya • Strong donor influence; accelerates innovation but risks parallel systems	Kenya • AI adoption externally paced; sustainability risks post-funding; regional disparities
	Ghana • Donor-driven innovation dominates • External actors sometimes exceed domestic regulatory capacity	Ghana • AI adoption heavily donor-driven; limited national oversight; sustainability & equity issues

Synthesized from literature sections 2.1–2.4.

IV.   POLICY RESPONSE ANALYSIS

Building on the literature review, the policy response analysis now examines how these dynamics materialize in practice within Kenya and Ghana. While both countries possess comprehensive formal frameworks, their enforcement architectures diverge in many ways.

Consistent with the literature, enforcement capacity is assessed across three analytically distinct but interdependent pillars: regulatory authority, institutional coordination, and fiscal and administrative capacity. This structure enables a systematic comparison of the operational mechanisms through which each country's health, ICT, and data protection institutions govern AI-related risks and thereby influence the effectiveness of AI integration within their health systems.

3.1. Regulatory Authority

Evidence informing the following conclusions draws primarily from Kenya's Office of the Data Protection Commissioner (Hereinafter: ODPC) reports, including monthly, quarterly, and annual publications, as well as a report produced by Amnesty International on Kenya's data protection. While these documents do not explicitly address "AI in health," they reveal structural and institutional features of digital governance that shape how AI systems are enforced and regulated in practice in Kenya. This is especially relevant because in LMIC's like Kenya and Ghana, AI oversight is emerging largely through data protection regimes rather than dedicated AI legislation. As a result, understanding the strength, capacity, and limitations of existing data protection enforcement provides an indirect but accurate lens for assessing the governance conditions under which AI is integrated into national health systems.

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[29] Mugambi, "The Role of Donor Agencies in Shaping National Digital Health Governance in Sub-Saharan Africa," in Digital Health in Africa, ed. S. O. Ojo and T. J. Greaney (Cham: Palgrave Macmillan, 2023), 45–62.

While the Data Protection Act and subsequent regulatory instruments establish a strong legislative foundation, the available evidence from the ODPC indicates that enforcement is still in an early and limited phase.[30] To date, regulatory interventions have been predominantly reactive and low-intensity, characterized by a reliance on complaint processing, administrative guidance, and informal compliance measures in lieu of proactive investigations or sanctions.[31] The ODPC's first annual report documents 352 complaints received and 291 resolved, though the latter were almost entirely public grievances, largely against political parties and digital lenders.[32] There is no evidence of a budget for auditors, sanctions, or technical experts to understand the AI systems they are supposed to regulate.[33] The heavy use of non-binding instruments further indicates that the ODPC's primary influence occurs through agenda-setting rather than coercive enforcement. The limited use of investigations, monitoring, and reliance on non-binding guidance instruments further illustrate a reactive enforcement regime with minimal deterrent effect. Further, while the ODPC's mandate theoretically extends to algorithmic systems, its practice remains focused on basic data management violations rather than higher-risk AI applications such as clinical decision-support, automated triage, or biometric verification in health facilities.

Ghana's regulatory authority exhibits a similar structural pattern, but one that has undergone a sharper decline due to fiscal and political pressures. Ghana's Data Protection Act serves as the primary legal instrument governing digital systems, but enforcement has historically been weak due to limited operational capacity within the Data Protection Commission (DPC). The proposed Data Protection Bill marks a significant evolution by explicitly addressing algorithmic decision-making: Section 53 states that technology-driven decisions impacting data subjects must be explainable, contestable, and subject to human oversight.[34] This provision is one of the clearest AI-relevant legal commitments in the region. Sections 29 and 93 further grant the Commission strong authority to impose administrative fines and enforcement notices.[35] However, Ghana's own government reports reveal that the DPC has been unable to exercise these powers effectively, due primarily to budget instability, long-term debts, and staffing gaps. This aspect will be further examined in later sections.

3.1.1. Comparative Insight: Normative Gaps

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[30] ODPC, Guidance Note on Biometric Data, 12-17; ODPC, *First Annual Report for the 2020/21 Financial Year (Nairobi: ODPC, September 2021), 9.
[31] Office of the Data Protection Commissioner. First Annual Report 17.
[32] Office of the Data Protection Commissioner. First Annual Report 17,72.
[33] ODPC, Guidance Note on Biometric Data, 35; ODPC, First Annual Report, 17.
[34] Data Protection Bill, 2025, Ghana Ministry of Communication, Digital Technology and Innovations, 2025, section 53. https://moc.gov.gh/wp-content/uploads/2023/03/DATA-PROTECTION-BILL.pdf
[35] Data Protection Bill, 2025, section 29 and 93.

Both countries possess strong de jure frameworks but exhibit de facto enforcement deficiencies. Kenya's gap lies in the absence of AI-specific regulatory instruments and limited operationalization of existing statutory powers. In Ghana, while the 2025 AI-related legislative provisions are comprehensive, institutional and resource constraints substantially hinder their effective implementation. To put it succinctly: Kenya's AI governance framework maintains institutional continuity but lacks targeted oversight mechanisms, whereas Ghana's framework includes extensive mandates that cannot be effectively implemented due to physical capacity constraints

3.2. Institutional Coordination

Kenya has made notable progress in consolidating digital governance institutions, which has strengthened cross-sector applications in emerging AI oversight. The Ministry of Information, Communications and the Digital Economy (MICDE), the Ministry of Health, the ICT Authority, and the ODPC all operate within a relatively clear division of labor defined by national digitalization strategies. The Digital Masterplan designates the Ministry as the central coordinator of digital transformation, including health-related AI initiatives, providing Kenya with a more coherent institutional ecosystem than most LMICs.[36] Nevertheless, fragmentation persists. ODPC's authority over data is not always aligned with the ICT Authority's technology deployment mandates or the Ministry of Health's digital health implementation planning. Coordination challenges include delays in sectoral data protection regulations, inconsistent guidance on data-sharing between health facilities and third-party technology vendors, and limited visibility into donor-funded digital health projects.[37] Amnesty International notes that regulatory responsibilities remain "spread across agencies with limited operational integration," reducing the state's ability to track AI systems embedded in clinical workflows.[38]

Ghana's institutional coordination landscape is far more fragmented. The Ghana E-Health Strategy notes that the health sector consists of a "wide range of autonomous providers" forming a "semblance of a fragmented health service."[39] This fragmentation extends to digital governance, where the Ministry of Health, National Information Technology Agency (NITA), Data Protection Commission, and CSA operate with overlapping responsibilities. The Strategy proposed an Interagency Ministerial Committee on E-Health, but recent government reports provide no evidence that this has become operational.[40] Moreover, Ghana's regulatory environment has suffered from increasing instability. An analysis of internal commentary from a development expert indicates that their initiatives frequently encounter bureaucratic

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[36] Kenya Ministry of Information, Communications and the Digital Economy. Kenya Digital Masterplan 2022–2032 (Nairobi: MICDE, 2022), 14–18.
[37] Office of the Data Protection Commissioner. Annual Report 2021/2022, 17..
[38] Amnesty International. Kenya: The Data Protection Act- Strengths, Gaps, and Opportunities for Reform (London: Amnesty International, 2022), 9.
[39] Ghana Ministry of Health. Ghana E-Health Strategy (Accra: Ministry of Health, 2010), 31.
[40] Republic of Ghana. Report of the Committee on Communications on the Annual Budget Estimates of the Ministry of Communications and Digitalisation for the 2024 Financial Year (Accra: Parliament of Ghana, 2023), 5–6.

fragmentation. Despite repeated engagement with multiple government ministries, these projects often fail to achieve formal registration or inter-agency recognition.[41] This results in institutional invisibility, where AI pilots operate without formal integration into national oversight structures. A 2021 WHO health-systems capacity review documented stalled AI diagnostic pilots in Ghanaian teaching hospitals due to the absence of a coordinating regulatory body to authorize data flows between ministries, ICT authorities, and hospital systems. Implementers reported that algorithms were trained and tested, but never nationally deployed due to lack of regulatory clearance pathways.[42] This breakdown in coordination is exacerbated by leadership turnover, fiscal stress, and donor-driven parallel systems that bypass government agencies entirely.[43] The responses of digital health in Ghana thus describe a governance environment where multiple institutions possess partial authority but none possess effective control.

3.2.1. Comparative Insight: Leadership, Turnover, and Stability

Kenya's comparative advantage lies in continuity. Stable leadership within The MICDE and the ICT Authority shows its capabilities for incremental strengthening of coordination mechanisms.[44] Ghana, by contrast, has experienced a decline in this cohesion as continuous turnovers, budgetary crises, and donor dependency have undermined the capacity of ministries to coordinate, making enforcement inconsistent.[45] Consequently, Kenya possesses moderate but functional institutional coherence, while Ghana exhibits high fragmentation and low state visibility of AI deployments.

3.2. Fiscal and Administrative Capacity

Kenya's fiscal and administrative profile reveals a state still in "start-up mode" for digital governance. The ODPC initially operated with only KES 25 million and 13 staff, many of whom were seconded, leaving it without the immediate technical expertise or investigative resources needed to oversee large-scale data infrastructures or more critically, the high-risk AI systems that rely on them.[46] While the budget saw a tenfold increase to approximately KES 250–270 million, procurement data indicates these resources were predominantly allocated to foundational needs: office setup, furniture, laptops, and physical AI development, reflecting an extended start-up mode of operation.[47] More specialized tools appear only later and in limited quantities, essentially meaning that the agency is still building its most basic operational capacity. Consequently, the ODPC resorted to outsourcing core functions like policy drafting, legal

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[41] Internal commentary from development practitioner, Grand Challenges Canada, 2025.
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[43] Republic of Ghana, Budget Estimates 2024, 12–16.
[44] Kenya Ministry of Information, Communications and the Digital Economy. Kenya Digital Masterplan 2022–2032 (Nairobi: MICDE, 2022), 14–18.
[45] Republic of Ghana. Budget Estimates 2024, 5–6.
[46] Office of the Data Protection Commissioner. Annual Report 2021/2022,7.
[47] Ibid., 9–10;6..

support, and IT development, pointing to gaps in internal expertise that limit its capacity for the proactive and sustained oversight required for complex AI systems.[48] Outsourcing helps fill immediate gaps but erode institutional learning and long-term capacity to regulate AI systems independently. At a sectoral level, Kenya's digital health architecture remains heavily influenced by external donors, though the government's oversight has strengthened in recent years.[49] The country benefits from comparatively stronger infrastructure and connectivity than Ghana, allowing for more consistent deployment of digital tools in health systems

Ghana's fiscal environment is markedly more constrained. Government budget documents from 2014–2024 show chronic underfunding across digital governance institutions.[50] The DPC has experienced budget instability and overspending driven by long-term debts, while the Cyber Security Authority (CSA), central to securing digital infrastructures, is non-functional due to a USD 46 million unpaid obligation.[51] Regulatory authority exists on paper, but the state lacks the fiscal stability to operationalize it, weakening the enforceability of AI-related safeguards. Infrastructure failures further undermine administrative capacity. The Rural Telephony Project, designed to expand connectivity essential for digital health and AI, remains stalled; 454 constructed cell sites cannot be activated due to delayed payments to contractors.[52] This failure is not simply an infrastructure issue, it is a direct enforcement barrier. Without connectivity, Ghana cannot ensure equitable AI deployment, cannot track AI systems across rural health facilities, and cannot guarantee that citizens can effectively challenge or even comprehend the AI-driven outcomes that impact them.[53] Administrative fragmentation compounds these challenges. As Effah's analysis of Ghanaian bureaucratic systems demonstrates, weak incentives, insufficient ICT skills, and siloed ministries generate persistent barriers to digitalization.[54] These structural issues directly diminish the state's ability to enforce AI-related rules even where legal authority exists.

3.3.1. Comparative Insight: Donor Dependence and Enforcement Limits

Both Kenya and Ghana depend on donor-funded digital health and AI initiatives, but Ghana's fiscal crisis and severe underfunding of regulatory agencies have caused a sharper erosion of enforcement capacity. Kenya's resourcing remains insufficient but stable; Ghana's is unstable and deteriorating. A comparative analysis of key indicators from 2008-2011 reveals fundamentally different environments for digital governance. Kenya's framework was shaped by

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[48] ODPC, Annual Report 2021/2022, 14.
[49] Njoroge et al., "Digital Health in Kenya: A Systematic Review," *BMC Health Services Research* 23, no. 112 (2023): 8–10.
[50] Republic of Ghana. Budget Estimates *2014-2024.*
[51] Republic of Ghana, Budget Estimates *2024*, 12–13.
[52] Republic of Ghana, Ministry of Communications and Digitalisation, Budget Performance Report 2023, 21.
[53] World Health Organization, *Global strategy on digital health 2020-2025 (2021).
[54] Effah, Joseph. "Institutional Barriers to Digitalization of Government Budgeting in Developing Countries," Electronic Journal of Information Systems in Developing Countries 78, no. 1 (2017): 1–16.

massive, direct donor influence, receiving up to $411 million in general budget support, that gave donors significant leverage over national policy.[55] In stark contrast, Ghana's model was defined by severe fiscal pressure, with its domestic debt ballooning from GHC 14 billion to over GHC 18 billion in the same period, severely constraining its capacity to fund independent regulatory bodies.[56] This divergence: Kenya's high donor dependency versus Ghana's domestic debt burden, created distinct vulnerabilities that continue to influence the enforcement capacity of their AI in health governance frameworks. If current fiscal and institutional trends persist, this would leave Kenya with a foundation for incremental improvement over time, while Ghana's regulatory system faces progressive erosion that may allow unregulated AI integration to become normalized.

With this, it is evident that these empirical realities indicate a critical divergence in enforcement mechanisms: Kenya's AI governance, despite its strong legal foundation, is constrained into a reactive posture reliant on complaint-based mechanisms due to staff and resource limitations. Ghana's framework, while ambitious, faces a more severe fiscal erosion of capacity. The consequence for the effectiveness of AI integration in both health systems is a significant "enforcement gap." This gap means that AI-related risks, such as diagnostic errors, data breaches, or algorithmic bias, are likely to go unmonitored and unaddressed until they manifest as patient harm. Instead of fostering safe, trustworthy, and effective AI integration, this reactive model places the entire burden of oversight on an inequipped population, ultimately negating the potential benefits of AI and perpetuating a cycle of constant risk within the very health systems the technology aims to strengthen.

V.   CONCLUSION

This comparative analysis demonstrates that the effectiveness of AI integration in Kenya and Ghana's health systems is fundamentally shaped not by the presence of formal strategies or legal frameworks, but by the quality and coherence of their enforcement mechanisms.

In Kenya, the architecture of AI enforcement is characterized by relative stability, moderate institutional coherence, and under-resourced but evolving regulatory bodies. The ODPC operates within a clear legal framework but enforces it in a largely reactive manner, relying heavily on public complaints while lacking the technical and financial tools to conduct proactive audits, algorithmic assessments, or sector-specific investigations.[57] Kenya's progress in digital governance leadership and institutional consolidation offers a stronger platform for

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[55] World Bank Group, "Africa Development Indicators: Kenya," DataBank, accessed 2025, https://databank.worldbank.org/source/africa-development-indicators.
[56] World Bank Group, "Africa Development Indicators: Ghana," DataBank, accessed 2025, https://databank.worldbank.org/source/africa-development-indicators.
[57] Office of the Data Protection Commissioner. First Annual Report.

incremental improvements, yet its enforcement capacities remain overshadowed by technical skill shortages, limited investigative tools, and donor dependency. As a result, AI integration in health occurs within a governance environment that is procedurally structured but substantively thin, constraining accountability but allowing for gradual maturation.

Ghana presents a more troubling trajectory. While Ghana articulates ambitious regulatory commitments, its enforcement institutions have been severely weakened by fiscal instability, infrastructure failures, erratic coordination, and donor-induced fragmentation. The inability to activate national cyber infrastructure, persistent budget arrears, and the erosion of state capacity across multiple agencies create conditions in which even legally comprehensive provisions cannot be operationalized. AI tools deployed within Ghana's health ecosystem therefore sit within a governance landscape marked by low visibility, inconsistent oversight, and limited state autonomy.

The comparison highlights that the enforcement gap is structural, political, and economic. It is shaped by fiscal constraints that limit autonomy, by overlapping mandates that dilute institutional responsibility, and by donor ecosystems that encourage projectization over system-wide regulatory coherence. These dynamics produce a model of AI governance in which oversight is reactive, fragmented, and often symbolic. Consequently, risks inherent to AI are unlikely to be detected or mitigated until they manifest in real harm. The implications for health system outcomes are substantial. Where enforcement is weak, AI integration tends to reproduce existing inequities, automate flawed processes, and erode public trust. Conversely, where enforcement capacity is coherent and adequately resourced, AI can support equitable service delivery, strengthen surveillance, and augment clinical decision-making in ways that align with national health priorities.

Ultimately, this paper suggests that effective AI governance in LMIC health systems depends less on adopting regulatory frameworks and more on strengthening the institutional mechanics that render those frameworks actionable. To bridge the enforcement gap, Kenya and Ghana will need to pursue reforms that include, consolidating mandates to reduce fragmentation; establishing clear operational guidelines for AI risks, auditing, and oversight; creating centralized registries of all digital health and AI deployments; and developing fiscal strategies that reduce dependence on external actors while enabling long-term regulatory investment.

VI.   APPENDIX

Table II. Inclusion/Exclusion Criteria

Category	Included	Excluded
Article Type	- Peer reviewed journal articles - Academic published books + book chapters - Formal reports from WHO, OECD, UNESCO, World Bank, and African Union - Government policies, regulations, acts, and committee reports - Grey literature describing enforcement mechanisms, AI regulation, digital health policy, donor influence, institutional formation - Budget and procurement documents that illustrate capacity constraints - Technical standards or guidelines	- Non-reviewed online blogs - Newspaper articles - Opinion pieces without evidence
Methodology	- Qualitative research (in-person commentary, thematic studies) - Quantitative evaluations of digital/AI systems - Policy analysis + implementation studies - Regulatory capacity assessments - Mixed-method studies in digital governance	- Anecdotal descriptions without documentation - Results not specifying methodology
Geographic Scope	- Low- and middle-income countries (LMICs) - Africa-focused studies with regulatory relevance - National case studies relevant to Kenya - National case studies relevant to Ghana - Regional comparisons within Africa	High-income studies, unless governance comparative relevance exists
Time Frame	- Post-2000 to present publications - Post 2015 focus for evidence base on AI and digital health innovations/tech field	Any pre-2000 publications unless foundational theory is referenced

Table III. Search Documentation

Search Date	Databases Used	Search terms	Total # of articles	Reviewed articles
Oct 17, 2025	Google Scholar IDRC Digital Library UIS Data Browser (UNESCO)	"LMIC AI regulation health enforcement" "AI accountability Kenya Ghana"	13	Li, Tracey, Abbas Wandella, Richard Gomer, and Mohamed Habib Al-Mafazy. "Operationalizing Health Data Governance for AI Innovation in Low-Resource Government Health Systems: A Practical Implementation Perspective from Zanzibar." Data & Policy 6 (2024): e63. https://doi.org/10.1017/dap.2024.65. Mengiste, S.A., Antypas, K., Johannessen, M.R. et al. eHealth policy framework in Low and Lower Middle-Income Countries; a PRISMA systematic review and analysis. BMC Health Serv Res 23, 328 (2023). https://doi.org/10.1186/s12913-023-09325-7 UNESCO, AI in Africa: Capacity, Risk, and Development (Policy Brief, 2022). https://unesdoc.unesco.org/ark:/48223/pf0000389357 UNESCO, Recommendation on the Ethics of Artificial Intelligence (2021).
Oct 22, 2025	PubMed WHO IRIS	"clinical AI integration Africa" "AI governance Kenya and Ghana" "Digital health strategy"	19	World Health Organization. Global Strategy on Digital Health 2020–2025. Geneva: WHO, 2021 Ethics and governance of artificial intelligence for health: WHO guidance. Geneva: World Health Organization; 2021. Licence: CC BY-NC-SA 3.0 IGO.
Nov 5-9, 2025	Kenyan Gov Portals (ODPC, ICTA, MICDE) Ghana Gov Portals (ODPC, ICTA, MICDE)	"ODPC annual report 2020–2024" "Budget health systems" "procurement AI oversight" "Procurement reports"	31	Office of the Data Protection Commissioner. 2025. *ODPC Strategic Plan 2025-2029: Promoting Your Personal Data Protection by Design or Default*. Nairobi: Office of the Data Protection Commissioner. https://www.odpc.go.ke/wp-content/uploads/2025/06/ODPC-Strategic-Plan-2025-2029.pdf. Office of the Data Protection Commissioner. 2021. *ODPC Strategic Plan FY 2022/3 - 2024/5: Promoting Data Protection by Design or by Default*. Nairobi: Office of the Data Protection Commissioner. https://www.odpc.go.ke/wp-content/uploads/2024/03/ODPC-Strategic-Plan.pdf. Kenya. 2019. The Data Protection Act, No. 24 of 2019. Kenya Gazette Supplement No. 181, Acts No. 24. Nairobi: Government Printer. Accessed June 25, 2024. https://www.odpc.go.ke/wp-content/uploads/2024/02/The

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Kenya. 2021. The Data Protection (Registration of Data Controllers and Data Processors) Regulations, 2021. Legal Notice No. 265. Nairobi: Government Printer. Accessed June 25, 2024. https://www.odpc.go.ke/wp-content/uploads/2024/03/THE-DATA-PROTECTION-REGISTRATION-OF-DATA-CONTROLLERS-AND-DATA-PROCESSORS-REGULATIONS-2021.pdf.

Office of the Data Protection Commissioner. 2025. Data Controllers 360 Degrees Compliance Requirements. Nairobi: Office of the Data Protection Commissioner. https://www.odpc.go.ke/wp-content/uploads/2025/07/Data-Controllers-360-Degrees-Compliance-Requirements.-Z-Card.pdf.

Office of the Data Protection Commissioner. 2023. Draft Strategic Plan 2023–2027: Promoting Personal Data Protection by Design or Default. Nairobi: Office of the Data Protection Commissioner. https://www.odpc.go.ke/wp-content/uploads/2024/12/Draft-Strategic-Plan-2023-2027.pdf.

Contract Awards & Procurement Reports- 2022-2023 (*8 reports reviewed)

Contract Awards & Procurement Reports- 2024 (*7 reports reviewed)

Contract Awards & Procurement Reports- 2024-2025 Financial Year (*6 reports reviewed)

Contract Awards & Procurement Reports- 2025 and Beyond (*5 reports reviewed)

Report of the Committee of Communications on the Annual Budget Estimate of the Ministry of Communications for the year ending 31st December, 2014 Cobbina, Herod (Parliament of Ghana, 2013-12)

Report of the Committee on Committee on Communications on the annual budget estimates of the Ministry of Communications and Digitalistion for the 2024 Financial Year Tetteh, Sylvester (Parliament of Ghana, 2023-12)

| Nov 11-13, 2025 | Scopus JSTOR Google scholar | "institutional capacity LMIC digital health" "bureaucratic enforcement Africa" | 9 | Andrews, Matt, Lant Pritchett, and Michael Woolcock. Escaping Capability Traps. 2013. Effah, Joseph. "Institutional Barriers to Digitalization of Government Budgeting in Developing Countries." EJISDC 78, no. 1 (2017). |

				Njoroge, Martin et al. "Assessing the Feasibility of eHealth and mHealth..." BMC Research Notes 10, no. 90 (2017). Njoroge, Martin et al. "Digital Health in Kenya..." BMC Health Services Research 23, no. 112 (2023). Phiri, Millie, and Allen Munoriyarwa. "Health Chatbots in Africa..." JMIR 25, no. 8 (2023).
Nov 14–16, 2025	PubMed African Journals Online Google Scholar Scopus EconLit WHO IRIS IDRC Repository Ghana Gov Archives (NITA, MoC, CSA)	"AI diagnostics Ghana" "eHealth enforcement barriers" "AI audit frameworks" "algorithmic risk Kenya Ghana" "donor dependency digital health regulation" "state capacity erosion Africa" "digital health project evaluation Ghana Kenya" "CSA arrears 46 million finance" "telephony rollout stalled"	27	World Health Organization. Global Strategy on Digital Health 2020–2025. Geneva: WHO, 2021 World Health Organization (WHO). Health Systems Capacity Review for Digital and AI-Supported Care in Ghana. Geneva: WHO, 2021. https://doi.org/10.1098/rsos.231994 Ghana. 2012. Data Protection Act, 2012 (Act 843). Accra: Government of Ghana. Ghana Data Protection Commission. 2021. Draft Data Protection (Data Controller and Data Processor) Registration Regulations, 2021. Accra: Data Protection Commission. Ghana Data Protection Commission. 2019. Draft Data Protection (Complaints Procedure) Regulations, 2019. Accra: Data Protection Commission. Ghana Data Protection Commission. 2019. Draft Data Protection (Conduct of Data Protection Audits) Regulations, 2019. Accra: Data Protection Commission. Ghana Data Protection Commission. 2020. *Strategic Plan (2020-2025): "Safeguarding Personal Information Through Effective Data Protection Regulation"*.Accra: Data Protection Commission. Ghana Data Protection Commission. 2020. Annual Report 2020. Accra: Data Protection Commission. Ghana Data Protection Commission. n.d. Guidance Note on Data Protection Impact Assessment (DPIA). Accra: Data Protection Commission.
Nov 17-21, 2025	OECD Policy Library PubMed Gale Academic Onefile	"soft law AI enforceability" "Algorithmic errors Africa health systems" "ghana kenya" AND "health system"	 19 4	OECD/UNESCO (2024), G7 Toolkit for Artificial Intelligence in the Public Sector, OECD Publishing, Paris, https://doi.org/10.1787/421c1244-en. Abrahams, Mark A. "A review of the growth of monitoring and evaluation in South Africa: monitoring and evaluation as a profession, an industry and a governance tool." African Evaluation Journal 3, no. 1 (2015). Gale Academic OneFile http://dx-doi-org.proxy.library.carleton.ca/10.4102/aej.v3i1.142.

Date	Source	Search terms	Count	References
	Government Budget Repositories (Kenya + Ghana) World Bank Group	"ghana kenya" AND "artificial intelligence ai" "ghana kenya" AND "digital health" "ghana kenya" AND "cybersecurity" "ghana kenya" AND "donor" "regulatory funding 2018–2024 Kenya" "regulatory funding 2018–2024 Ghana" "ODPC annual report" "parallel health systems enforcement collapse"	2 2 0 4	Adepoju, T., and Chinedu Mba. "Patient Data Leakage and AI Diagnostic Risk in West African Hospitals." Journal of Global e-Health 9, no. 2 (2023): 51–78. Shiffman, Jeremy. "Donor Funding Priorities for Communicable Disease Control in the Developing World." Health Policy and Planning 21, no. 6 (2006): 411–420. Effah, J. and Nuhu, H. (2017), Institutional Barriers to Digitalization of Government Budgeting in Developing Countries: A Case Study of Ghana. The Electronic Journal of Information Systems in Developing Countries, 82: 1-17. https://doi.org/10.1002/j.1681-4835.2017.tb00605.x World Bank Group, "Africa Development Indicators: Ghana," DataBank, accessed 2025, https://databank.worldbank.org/source/africa-development-indicators. World Bank Group, "Africa Development Indicators: Kenya," DataBank, accessed 2025, https://databank.worldbank.org/source/africa-development-indicators.
Nov 21, 2025	Africa Commons Google scholar	"AI governance enforcement" "LMIC health AI" "Sub saharan africa donor dependency in health" "Ghana donor dependency in health AI" "Kenya donor dependency in health AI"	17 8 28 25 7	Eke, Damian Okaibedi, Kutoma Wakunuma, and Simisola Akintoye. "Challenges and Opportunities for Responsible AI in Africa." In Responsible AI in Africa, 178–192. Abebe, Rediet et al. "Algorithmic Colonialism." In Responsible AI in Africa, 171–194. Kimani, Hannah, Samuel Toure, and David M. Ndhlovu. "AI-Assisted TB Screening in Sub-Saharan Africa: Accuracy Variation, Calibration Failure, and Clinical Risk." Lancet Digital Health 4, no. 8 (2022): e601–e613.
Nov 22, 2025	Google Scholar Pubmed UNDP publications	"AI harms unregulated LMIC" "Kenya's AI enforcement" "health data leakage Africa" "AI regulation Kenya" "AI regulation Ghana" "digital frameworks" "digital interventions Kenya" "digital interventions Kenya"	6 18 8 19 7 2	Quakyi, Nana Kofi, Ama Owusu, Edward Ampofo, and Helena Adomako. "National eHealth Systems Integration in Ghana: A Comparative Review of GHS and Donor Platforms." BMC Health Services Research 22, no. 311 (2022). Muthoni, Anne. "Digital Health Interventions in Kenya During COVID-19 Response." East African Medical Journal 97, no. 4 (2021): 211–225. Adepoju, T., and Chinedu Mba. "Patient Data Leakage and AI Diagnostic Risk in West African Hospitals." Journal of Global e-Health 9, no. 2 (2023): 51–78.

Nov 23, 2025	Pubmed Omni Carleton MacOdrum Library	"Artificial intelligence in healthcare" "Ai in Africa"	5	Amnesty International. Kenya: The Data Protection Act—Strengths, Gaps, and Opportunities for Reform. London: Amnesty International, 2022.
Nov 24-25, 2025	Google scholar	"Data Protection Commission (DPC), Ghana – Annual Reports" "Kenya digital masterplan"	1 6 3	Shao, Deo et al. "Bridging the Gap: A Comparative Analysis of Data Protection Regulations in East African Countries." Digital Policy, Regulation and Governance 27, no. 4 (2025). "UNESCO, Recommendation on the Ethics of Artificial Intelligence (2021)."

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