

Effect of Artificial Intelligence on Telecommunications and the Digital Economy in Africa: Platform Monopoly, Data Sovereignty Crisis, and Digital Industrial Policy Solutions

Emmanuel Usulor Nwogboji^{1*}, Umar Atolagbe¹, Paul Idowu Bamigbola¹,
Ogah Sunday Ogbo¹, Igwe Emmanuel Sunday¹, Emmanuel Simon Audu¹

¹ Veristzon Global Research Lab, Abuja, Nigeria

* Corresponding author: Emmanuel Usulor Nwogboji

Veristzon Global Research Lab, Flat 4, Zaphania's Dynasty Estate,
Kobi Sarki-Guzape Road, Asokoro Extension, Abuja 900102, FCT, Nigeria

Email: emmanuelusulor@airinternational.org

ABSTRACT

This study examines how artificial intelligence is transforming telecommunications and the digital economy in Africa, paying close attention to the risks of platform dominance, the growing concerns around data sovereignty, and the policy choices needed to strengthen Africa's digital independence. It adopts a mixed-methods approach, drawing on documentary analysis, comparative regulatory review, and secondary data from GSMA, the International Telecommunication Union, the African Development Bank, and national regulators in Nigeria, Kenya, South Africa, Ghana, and Egypt. Guided by Platform Regulatory Theory and Digital Colonialism Theory, the study identifies six key areas of disruption. These include the growing dominance of foreign platforms in AI-driven services such as search, social media, and cloud infrastructure; the widespread extraction of African data with limited local control; and the increasing pressure faced by domestic digital firms competing with global platforms. The study also highlights how algorithmic systems are shaping public discourse without adequate accountability, alongside rising dependence on foreign digital infrastructure and the continued exclusion of low-income populations due to access and affordability challenges.

The findings show that foreign platforms control between 76% and 98% of major digital sectors, while regulatory capacity across the selected countries remains weak. The study describes this as an "African AI digital sovereignty deficit," where key digital systems are externally controlled. To address this, it proposes a practical policy framework focused on strengthening regulation, investing in local infrastructure, supporting digital enterprises, and improving coordination at the continental level.

Keywords: artificial intelligence; telecommunications Africa; digital economy; data sovereignty; platform monopoly; digital colonialism; digital industrial policy; AI governance; Smart Africa; digital inclusion

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1. INTRODUCTION

Telecommunications and the digital economy constitute the nervous system of the twenty-first century economy. The ability to communicate, transact, access information, and participate in digital markets determines the economic opportunities available to individuals, enterprises, and governments in an increasingly platform-mediated world. Africa's digital economy is growing rapidly: the GSMA estimates that mobile internet users in sub-Saharan Africa will reach 600 million by 2030, and the digital economy's contribution to African GDP is projected to reach 8.5 percent by 2050 [1]. This growth trajectory represents a genuine development opportunity, but it is being shaped predominantly by the strategic interests of foreign AI platform corporations rather than by African digital industrial policy [2].

Artificial intelligence has fundamentally restructured the economics and governance of digital platforms, telecommunications infrastructure, and digital market competition. AI systems now determine what information African citizens see when they search the internet, what content they encounter on social media, what prices they pay for goods, and what communications they can make. These AI systems are designed, trained, and operated by a small number of foreign technology corporations whose accountability to African democratic institutions is minimal, whose data practices extract value from African citizens without commensurate economic returns, and whose market dominance prevents the development of competitive African digital enterprises [2].

This paper makes two distinctive analytical contributions differentiating it from preceding papers in the series. First, a Sovereignty Erosion Flow that traces the sequential transition across five digital governance dimensions from pre-AI partial sovereignty through AI platform penetration to the current state of structural dependency, making visible the directional and self-reinforcing character of sovereignty loss. Second, a Platform Power Audit Grid anchored to empirical market concentration percentages rather than abstract scores, enabling policy urgency to be assessed from documented evidence rather than analytical judgment alone.

The primary contribution to knowledge is the identification of the African AI digital sovereignty deficit: the structural condition in which the AI systems governing Africa's digital economy are designed, owned, trained, and operated by foreign corporations, leaving African states, enterprises, and citizens as data subjects and platform dependents rather than digital economy sovereigns. The paper addresses four research questions: what AI disruption pathways are eroding African digital sovereignty; what empirical evidence documents platform concentration across seven digital sectors; what governance gaps allow these conditions to persist; and what digital industrial policy framework can restore African digital sovereignty?

2. BACKGROUND AND POLICY LANDSCAPE

A. African Digital Economy and the Sovereignty Challenge

Africa's digital economy is characterised by structural dependency on foreign AI platforms extending across every major digital economy sector. Google commands an estimated 94 percent of African search traffic, through which AI ranking algorithms shape what information is discoverable across the continent [3]. Meta's platforms serve as the primary communication and information infrastructure for hundreds of millions of Africans, with AI content recommendation algorithms determining what political, commercial, and social content reaches African users [4]. Amazon Web Services, Google Cloud, and Microsoft Azure host the cloud infrastructure on which an increasing proportion of African government and enterprise data is stored, processed, and analysed by AI systems under foreign

legal jurisdiction [5]. This concentration represents a structural transfer of sovereign-scale power over Africa's information environment from African democratic institutions to foreign technology corporations.

B. Data Sovereignty and the AI Extraction Economy

African citizens generate approximately 3.9 zettabytes of data annually through their interactions with digital platforms, telecommunications systems, and connected devices [6]. When African citizens' data is collected by foreign AI platforms, processed on foreign servers, used to train AI models serving global markets, and monetised through targeted advertising and data brokerage, the economic value created from African data accrues primarily to foreign shareholders. This data extraction dynamic is what scholars of digital colonialism identify as the structural asymmetry of the AI global information economy: Africa contributes data and receives platforms, while the economic value created flows outward [7].

Table 1

Policy and Regulatory Landscape: AI in Telecommunications and the Digital Economy in Africa

Instrument	Jurisdiction	Type	AI Telecom-Specific	Provisions and Governance Gaps
ITU AI for Good Framework (2023)	International	Framework	Partial	Promotes AI for sustainable development. Non-binding. No data sovereignty requirements, platform market power standards, or content algorithm accountability provisions.
African Union Data Policy Framework (2022)	African Union	Framework	Partial	Establishes African data governance principles. Non-binding. No enforcement mechanism. AI platform data extraction not specifically addressed.
South Africa: POPIA (2020), Electronic Communications Act (2005)	South Africa	Legislation	Partial	POPIA provides data protection applicable in principle. No AI platform market power standard. No content algorithm accountability requirement.
Nigeria: Nigeria Data Protection Act (2023), NCC Policy on AI (draft 2024)	Nigeria	Legislation	Partial	NDPA is strong recent legislation but contains no AI-specific provisions. NCC draft AI policy does not yet have legal force.
Kenya: Data Protection Act (2019), Communications Authority Digital Framework	Kenya	Legislation	No	Data Protection Act applicable in principle. No AI-specific digital economy provisions. Platform competition not addressed.
Ghana: Data Protection Act (2012), National Communications Authority	Ghana	Legislation	No	Outdated data protection framework. No AI provisions. Digital platform concentration unaddressed.
Egypt: Personal Data Protection Law (2020), NTRA Digital Strategy	Egypt	Legislation	Partial	Data protection law enacted. NTRA digital strategy references AI. No binding AI platform market power or content accountability provisions.
All jurisdictions: AI Platform and Data Sovereignty Governance	All five	Gap	No	No African jurisdiction has enacted AI platform market power standards, mandatory data localisation, content algorithm accountability requirements, or AI-specific digital industrial policy. Universal governance absence confirmed.

Note: Sources: ITU 2023 [8]; AUC 2022 [9]; DCDT South Africa 2023 [10]; NITDA Nigeria 2023 [11]; CA Kenya 2023 [12]; NCA Ghana 2023 [13]; NTRA Egypt 2023 [14].

D. Policy Gaps

The regulatory mapping confirms five critical governance gaps across all five focus countries. No African jurisdiction has enacted mandatory data localisation for AI platform data. No African competition authority has issued AI platform market power standards addressing network effects and data monopoly advantages. No African telecommunications regulator has enacted content algorithm accountability requirements. No African digital industrial policy specifically addresses AI capability development through technology transfer or domestic AI enterprise support. No continental coordination prevents African countries from undercutting each other's digital sovereignty protections.

3. THEORETICAL FRAMEWORK AND ANALYTICAL MODELS

A. Platform Regulatory Theory

Platform Regulatory Theory, developed by Mansell [15] and extended by Srnicek [16] and applied to African digital markets by Gillwald [17], provides the analytical framework for understanding how AI platform economics generate market structures requiring specific regulatory responses. The theory holds that AI platforms exhibit three structural features generating natural monopoly tendencies: network effects making platforms more valuable as users grow; data monopoly advantages enabling platforms with larger user bases to train more accurate AI models; and algorithmic market power enabling platforms to self-preferentially rank their own products. Applied to Africa, the theory predicts that absent regulatory intervention, foreign AI platform dominance will become self-reinforcing and increasingly difficult to contest.

B. Digital Colonialism Theory

Digital Colonialism Theory, developed by Kwet [7] and applied to African digital economy contexts by Mohamed, Png, and Isaac [18], provides the political economy framework for understanding the structural transfer of digital value from African economies to foreign technology corporations through AI platform dynamics. The theory holds that the digital economy replicates the structural asymmetry of colonial economic relations: colonial extraction of raw material wealth is replaced by AI extraction of citizen data; colonial control of production is replaced by foreign AI platform control of digital market infrastructure; and colonial governance of subject populations is replaced by AI algorithmic governance of digital information environments.

C. Sovereignty Erosion Flow

Figure 1 presents the Sovereignty Erosion Flow, a three-phase directional model tracing the transition from partial sovereignty through AI penetration to structural dependency across five digital sovereignty dimensions. Unlike static gap assessments that describe current deficits, the flow format captures the dynamic, sequential, and directional character of sovereignty loss. Each Phase 3 cell documents the actual current condition in the five focus countries grounded in empirical evidence reviewed in this study. The format was specifically designed to communicate that the current state is not a governance gap waiting to be filled but Phase 3 of an active erosion process requiring reversal rather than merely prevention.

Figure 1: Digital Sovereignty Erosion Flow: Three Phases of AI Telecom Disruption in Africa

FIGURE 1: DIGITAL SOVEREIGNTY EROSION FLOW — THREE PHASES OF AI TELECOM DISRUPTION IN AFRICA			
SOVEREIGNTY AXIS	PHASE 1: PRE-AI STATE (Partial sovereignty)	PHASE 2: AI PENETRATION (Transition)	PHASE 3: AI DEPENDENCY (Current — all five countries)
Data Sovereignty	African users interacted with national telecoms; billing and communication data held domestically under regulated conditions	Foreign AI platforms (Meta, Google, TikTok) entered as primary communication layer; data flows shifted to foreign servers; jurisdiction unclear	Approximately 90% of African data traffic processed by foreign AI platforms outside African jurisdiction; no data localisation requirement in any focus country

Content Governance	National broadcasting regulators governed media; editorial standards set by domestic institutions with democratic accountability	AI recommendation algorithms replaced editorial gatekeeping; content ranking by engagement metrics without public interest obligation	AI content ranking determines what 600 million Africans see politically and socially; zero accountability of foreign AI to African democratic institutions
Infrastructure Sovereignty	National telecoms operated domestic networks; government held strategic assets; spectrum managed by national regulators	AI network management vendors (Huawei, Ericsson, Nokia) deployed AI in core network; technical dependency through proprietary AI systems	Core telecom AI managed by foreign vendors in all five focus countries; switching cost eliminates competitive pressure
Market Sovereignty	National telecoms and domestic enterprises competed; regulation protected local market development	Foreign AI platforms created platform economies replicable only at scale domestic enterprises lacked; network effects concentrating power	Three foreign platforms (Google, Meta, Alibaba ecosystem) control search, social media, and growing e-commerce; African digital enterprises cannot compete
Regulatory Capacity	Telecoms regulators governed conventional network services; capacity adequate for pre-AI requirements	AI complexity exceeded regulator technical capacity; vendors more expert than regulators; assessment beyond conventional expertise	No African telecom regulator has AI system audit capability; governing AI requires expertise absent from all five focus country regulators
DIRECTION	Partial Sovereignty (starting point)	Eroding Sovereignty >>>	STRUCTURAL DEPENDENCY (Current all five countries)
Source: Authors Sovereignty Erosion Flow applying Platform Regulatory Theory (Mansell 2020) and Digital Colonialism Theory (Kwet 2019). Three-phase flow captures directional, sequential sovereignty loss distinguishing it from static gap assessments.			

Note: Three-phase flow reveals current dependency is not a passive starting point but Phase 3 of an erosion sequence. Phase 2 transition column identifies the specific AI mechanism driving each dimension, enabling policy to target the mechanism. Source: Authors Sovereignty Erosion Flow applying Platform Regulatory Theory (Mansell 2020) and Digital Colonialism Theory (Kwet 2019).

D. Platform Power Audit Grid

Figure 2 presents the Platform Power Audit Grid, which assesses AI platform concentration across seven African digital economy sectors using empirical market share percentages rather than abstract governance scores. Each cell contains a concrete metric drawn from GSMA, ITU, and African Competition Forum data. Colour coding signals regulatory urgency: red cells indicate monopolistic concentration above 80 percent top-three market share; amber cells indicate oligopolistic concentration between 55 and 80 percent; green cells indicate competitive markets below 55 percent. The format was chosen to anchor regulatory urgency assessments to documented evidence rather than analytical judgment.

Figure 2: Platform Power Audit Grid: Empirical Market Concentration Indicators by Digital Sector

FIGURE 2: AI PLATFORM POWER AUDIT GRID — EMPIRICAL CONCENTRATION INDICATORS BY SECTOR (Top-3 Combined Share %)				
Each cell contains an empirical percentage from GSMA/ITU/ACF data rather than an abstract score. Red = Monopolistic (above 80% top-3 share). Amber = Oligopolistic (55-80%). Green = Competitive (below 55%).				
DIGITAL SECTOR	Market Leader & Share	Top-3 Combined	African-Owned Alternatives	AI Governance Status
Internet Search	Google: 94%	98%	None >1%	ABSENT: No market power standard
Social Media	Meta (Facebook): 63%	91%	Witter, Ushahidi (niche)	ABSENT: No content algorithm accountability
Mobile Payments	M-Pesa (E. Africa): 83% corridor	76% cross-Africa	M-Pesa + MoMo: African-led	PARTIAL: Regulated but no AI credit bias audit

Cloud Infrastructure	AWS: 33%; Azure: 28%	83%	Liquid Cloud (5% combined)	ABSENT: No data localisation requirement
Video Entertainment	YouTube: 68%	87%	Showmax (niche)	ABSENT: AI recommendation ungoverned
Messaging	WhatsApp: 85%	95%	None at scale	ABSENT: AI-mediated forwarding drives disinformation
E-Commerce	Jumia (losing share); Amazon growing	55% formal e-commerce	Jumia (struggling); Takealot (SA)	ABSENT: No AI pricing standard; no trader protection
Source: GSMA Mobile Economy Report 2023; ITU Digital Development Dashboard 2023; African Competition Forum Digital Markets Report 2023; StatCounter Africa 2023. Red cells (>80%) require immediate regulatory action; Amber cells (55-80%) require regulatory attention; Green cells (<55%) require monitoring.				

Note: Five of seven sectors in Red (monopolistic) category. Messaging (95%), video (87%), cloud (83%), social media (91%), and search (98%) are most acutely monopolistic with zero adequate governance response. Source: GSMA 2023; ITU 2023; African Competition Forum 2023; StatCounter Africa 2023.

4. METHODOLOGY

A. Research Design

This study employs a mixed-methods research design combining qualitative digital regulatory analysis with secondary quantitative data analysis, following the explanatory sequential mixed-methods model of Creswell and Creswell [19]. The Sovereignty Erosion Flow was developed through systematic documentary analysis of regulatory frameworks and platform governance documentation, with each phase transition validated against published evidence of AI platform entry and regulatory response in the five focus countries. The Platform Power Audit Grid was constructed from GSMA, ITU, and African Competition Forum market share data verified against company reporting and independent academic market analyses.

B. Data Sources

Primary quantitative sources: GSMA Mobile Economy Sub-Saharan Africa 2023 [1]; ITU Digital Development Dashboard 2023 [20]; African Development Bank Digital Infrastructure Report 2023 [21]; African Competition Forum Digital Markets Report 2023 [22]; StatCounter Africa Market Share Data 2023 [3]. Secondary category: digital legislation, telecommunications acts, data protection laws, competition statutes, and AI governance instruments from all five focus countries. Tertiary: peer-reviewed academic literature published 2020-2026 identified through systematic searches on AI platform governance Africa, digital sovereignty, telecom AI Africa, and digital monopoly Africa. Of 88 articles identified, 53 met inclusion criteria.

C. Limitations

Three limitations apply. Market share data for African digital economy sectors is not uniformly available with complete granularity, requiring some estimates from available data. The Audit Grid colour thresholds encode analytical judgments about regulatory urgency that alternative frameworks might calibrate differently. AI platform market dynamics evolve faster than publication cycles, meaning specific percentages may have shifted marginally between data collection and publication.

5. AI IN AFRICAN TELECOMMUNICATIONS AND DIGITAL ECONOMY: APPLICATIONS AND IMPLICATIONS

A. Current AI Applications

AI is deployed across seven functional domains in African telecommunications and digital economy. AI network management and optimisation tools are used by MTN, Airtel, Safaricom, and Vodacom to manage spectrum allocation, predict network demand, optimise base station coverage, and reduce operational costs [1]. AI content recommendation systems operated by Meta, Google, and TikTok determine what content African users see across social media, search, and video platforms [4]. AI fraud detection and customer service platforms are deployed by telecommunications companies across all five focus countries [5]. AI pricing and dynamic tariff management tools enable telecommunications operators to adjust data and voice pricing in real time based on demand patterns [1]. AI supply chain and inventory management for telecommunications equipment is deployed by both operators and equipment vendors including Huawei, Ericsson, and Nokia [2]. AI-powered financial services embedded in telecommunications platforms are deployed through M-Pesa, MTN MoMo, and Airtel Money [21]. AI regulatory compliance tools used by telecommunications operators to automate compliance reporting create information asymmetries between operators and regulators [20].

B. Benefits and Opportunities

Three categories of documented benefit are established. First, network efficiency: AI network management has improved spectrum utilisation efficiency by an estimated 20 to 35 percent for operators deploying AI optimisation tools, improving service quality for end users [1]. Second, fraud reduction: AI fraud detection systems have reduced mobile money and telecommunications fraud losses by an estimated 30 to 60 percent for deploying operators in Kenya and South Africa, protecting consumers and operator revenues [21]. Third, financial inclusion: AI credit scoring embedded in mobile money platforms has enabled access to small-value credit for populations without formal credit histories, with M-Pesa's Fuliza and MTN MoMo credit products reaching millions of previously unbanked Africans [21].

C. Risks and Harms

Six risk categories are identified. The first is data sovereignty loss: every AI platform interaction generates data flowing to foreign systems, creating ongoing extraction of African citizen data without sovereignty protections or economic returns to African economies [7]. The second is AI content algorithm manipulation of public discourse: AI recommendation systems determining content visibility have been documented to amplify divisive content in African markets because such content generates higher engagement metrics, with consequences for electoral integrity and intercommunal violence [4]. The third is foreign AI vendor lock-in for telecommunications infrastructure: Huawei, Ericsson, and Nokia AI network management systems create technical dependencies reducing African operators' bargaining power [2]. The fourth is AI platform monopoly suppression of African digital enterprise: network effect and data advantages of dominant AI platforms create conditions in which African digital enterprises cannot compete at scale [17]. The fifth is regulatory capacity erosion: AI complexity exceeds regulator technical capacity across all five focus countries, as Phase 3 of Figure 1 confirms [20]. The sixth is algorithmic credit exclusion through telecommunications-embedded financial services, replicating the AI financial inclusion gap documented in Paper 19 of this series [21].

6. FINDINGS AND DISCUSSION

A. Key Findings

Finding 1: The Sovereignty Erosion Flow confirms that digital sovereignty loss is not a static condition but an active three-phase erosion process that has advanced to Phase 3 structural dependency across all five sovereignty dimensions in all five focus countries. The most irreversible erosions are in data sovereignty, content governance, and regulatory

capacity, where Phase 3 conditions are entrenched and require active intervention to reverse rather than merely governance gaps to be filled.

Finding 2: The Platform Power Audit Grid confirms that five of seven African digital economy sectors have top-three platform concentration above 80 percent, placing them in the monopolistic category requiring immediate regulatory action. Messaging at 95 percent, social media at 91 percent, search at 98 percent, video entertainment at 87 percent, and cloud infrastructure at 83 percent are all in the Red category with zero adequate governance response in any sector across all five focus countries.

Finding 3: African-owned platforms exist in only two of seven sectors assessed: mobile payments, where M-Pesa and MTN MoMo represent genuine African-owned AI platforms with significant market share, and e-commerce, where Jumia represents an African-led but commercially struggling platform. In five of seven sectors there is no African-owned AI platform with meaningful market presence, confirming the digital sovereignty deficit at the enterprise level.

Finding 4: The Phase 3 Regulatory Capacity Erosion in Figure 1 and the Absent governance status across all sectors in Figure 2 create a governance trap: regulators who need to govern AI platforms have lost the technical capacity to do so precisely because AI platform penetration advanced without regulatory accompaniment. This trap requires institutional capacity investment as a precondition for effective regulation, not only policy reform.

B. Discussion

The findings confirm Platform Regulatory Theory's prediction that AI platform network effects and data monopoly advantages generate self-reinforcing market structures requiring early intervention [15, 16]. They extend Digital Colonialism Theory by demonstrating that sovereignty erosion operates simultaneously across five dimensions, producing a multi-dimensional dependency that cannot be addressed by any single policy instrument [7, 18]. The Sovereignty Erosion Flow contributes the analytical insight that current dependency is Phase 3 of an erosion sequence, meaning policies designed to prevent erosion are no longer sufficient; policies to reverse established dependency are required. The Platform Power Audit Grid contributes the methodological innovation of anchoring regulatory urgency to empirical market share data, making the case for intervention from evidence rather than abstract governance assessments alone.

7. POLICY RECOMMENDATIONS

Table 2

Summary of Policy Recommendations

Priority	Recommendation	Target Actor(s)	Timeline
HIGH	Enact comprehensive data sovereignty legislation requiring AI platform data generated by African citizens to be stored and processed in African jurisdictions, with mandatory access rights for national regulators and specific consent requirements before AI training use.	ICT Ministries; Data Protection Authorities	Short-term: 1 to 2 years
HIGH	Issue AI platform market power standards through competition authorities, establishing that AI network effect and data monopoly advantages constitute dominance requiring specific obligations including data portability, interoperability, and algorithmic transparency.	Competition Authorities; ICT Regulators	Short-term: 1 to 2 years
HIGH	Mandate content algorithm accountability requiring AI content platforms to disclose ranking criteria, conduct independent audits for democracy-undermining effects, and provide accessible appeals mechanisms for content decisions.	Communications Regulators; ICT Ministries	Short-term: 1 to 2 years

HIGH	Establish African AI infrastructure investment funds to build regionally hosted cloud computing, AI training compute, and data centre infrastructure as an alternative to foreign cloud dependency for critical government and telecommunications data.	Finance Ministries; ICT Ministries; AfDB; Smart Africa	Short-term: 1 to 2 years
MEDIUM	Enact digital enterprise AI support programmes providing African digital enterprises with preferential access to AI computing resources, AI training data grants, and regulatory sandboxes that level the competitive field against foreign AI platform incumbents.	ICT Ministries; Competition Authorities; AfDB	Medium-term: 3 to 5 years
MEDIUM	Develop spectrum AI governance standards requiring AI spectrum management systems to prioritise universal access, rural coverage, and emergency communications as mandatory optimisation constraints alongside commercial objectives.	Telecommunications Regulatory Authorities	Medium-term: 3 to 5 years
LOW	Establish a continental digital sovereignty architecture under the African Union and Smart Africa Alliance, including harmonised data sovereignty standards, a continental AI platform competition framework, and a pan-African digital enterprise development fund.	African Union Commission; Smart Africa Alliance	Long-term: 5 or more years

Note: Pillars 1 and 3 address data and content dimensions of Figure 1; Pillars 2 and 5 address the market dimension; Pillar 4 addresses infrastructure; Pillar 6 addresses regulatory capacity. Pillar 7 creates continental coordination.

Pillar 1. Data Sovereignty Legislation

ICT ministries and data protection authorities must enact comprehensive data sovereignty legislation requiring that AI platform data generated by African citizens, including search queries, social media interactions, financial transactions, communications metadata, and location data, is stored and processed in African jurisdictions. This legislation must specify mandatory government access rights to AI platform data for regulatory oversight purposes, specific consent requirements before citizen data is used for AI model training, and data portability rights enabling citizens to transfer their data between platforms. The evidence base is Finding 1 and the Phase 3 data sovereignty column of the Sovereignty Erosion Flow, which confirms structural compromise across all five focus countries.

Pillar 2. AI Platform Market Power Standards

National competition authorities must issue AI platform market power standards addressing the dominance mechanisms documented in the Platform Power Audit Grid: network effects creating winner-take-all dynamics, data monopoly advantages enabling AI accuracy improvements unavailable to smaller competitors, and algorithmic self-preferencing disadvantaging competing services. These standards must establish specific dominance thresholds for AI-powered digital markets, define obligations applicable to dominant AI platforms including data sharing, interoperability, and algorithmic transparency, and specify remedies when AI platform dominance harms consumers or forecloses competition. The evidence base is Finding 2, which documents five of seven sectors in the monopolistic category.

Pillar 3. Content Algorithm Accountability

Communications regulators and ICT ministries must mandate content algorithm accountability requiring AI content platforms operating in African jurisdictions to disclose the ranking criteria and optimisation objectives governing what content is surfaced to African users. Mandatory requirements must include independent algorithmic audits assessed against public interest criteria including electoral integrity, intercommunal harmony, and the prevention of disinformation amplification. Platforms must provide accessible appeals mechanisms for content decisions affecting African users, and regulators must be granted technical access to audit AI recommendation systems for democracy-undermining effects. The evidence base is the Phase 3 content governance column of the Sovereignty Erosion Flow, which confirms that AI algorithmic governance of African information environments operates with zero accountability to African democratic institutions across all five focus countries.

Pillar 4. African AI Infrastructure Investment

Finance ministries, ICT ministries, the African Development Bank, and the Smart Africa Alliance must establish dedicated African AI infrastructure investment funds to build regionally hosted cloud computing capacity, AI training compute infrastructure, and sovereign data centres as alternatives to foreign cloud dependency for critical government and telecommunications data. Investment priorities must include: multi-country regional data centre facilities providing African-jurisdiction hosting for government and enterprise data currently processed under foreign legal authority; shared AI compute infrastructure enabling African research institutions and digital enterprises to train competitive AI models without dependency on foreign cloud providers; and open-access AI training datasets curated from African-origin data under African data sovereignty frameworks. The evidence base is the Phase 3 infrastructure sovereignty column of Figure 1 and the cloud infrastructure Red cell in the Platform Power Audit Grid, confirming 83 percent foreign platform concentration with zero data localisation requirement in any focus country.

Pillar 5. Digital Enterprise AI Support Programmes

ICT ministries, competition authorities, and the African Development Bank must enact digital enterprise AI support programmes that provide African digital enterprises with the structural conditions necessary to compete against foreign AI platform incumbents whose data monopoly and network effect advantages cannot be overcome without targeted intervention. Support instruments must include: preferential access to AI computing resources through subsidised allocation from continental AI infrastructure established under Pillar 4; AI training data grants enabling African enterprises to develop competitive AI models using curated domestic datasets; regulatory sandboxes providing African digital enterprises with expedited licensing and reduced compliance burden during the market development phase; and mandatory technology transfer requirements attached to foreign AI platform operating licences, obligating knowledge transfer to African AI development institutions. The evidence base is Finding 3, which documents the absence of African-owned AI platforms with meaningful market presence in five of seven assessed digital sectors, confirming the need for active enterprise development policy.

Pillar 6. Spectrum AI Governance Standards

Telecommunications regulatory authorities must develop spectrum AI governance standards requiring that AI spectrum management systems deployed by operators and vendors prioritise universal access, rural coverage, and emergency communications as mandatory optimisation constraints alongside commercial efficiency objectives. Current AI spectrum management systems optimise for revenue-generating use cases, systematically disadvantaging low-density rural areas and underserved populations whose service costs are higher. Standards must specify: mandatory coverage obligations embedded as non-negotiable constraints in AI spectrum optimisation algorithms; algorithmic transparency requirements enabling regulators to audit AI spectrum decisions for public interest compliance; and vendor-neutral technical standards preventing proprietary AI spectrum management systems from creating the switching cost lock-in documented in the Phase 3 infrastructure sovereignty column of Figure 1. The evidence base is the regulatory capacity erosion documented in Finding 4, which confirms that AI complexity has outpaced regulator technical capacity across all five focus countries, requiring standards development as a precondition for effective oversight.

Pillar 7. Continental Digital Sovereignty Architecture

The African Union Commission and the Smart Africa Alliance must establish a continental digital sovereignty architecture providing the coordination framework without which Pillars 1 through 6 risk being undermined by regulatory arbitrage, in which foreign AI platforms shift operations to African jurisdictions with the weakest sovereignty protections. The continental architecture must comprise three components: harmonised data sovereignty standards establishing minimum requirements that all African Union member states must implement, preventing foreign platforms from exploiting divergent national frameworks; a continental AI platform competition framework enabling cross-border enforcement action against dominant platforms whose market power operates across national boundaries and cannot be adequately addressed by national competition authorities acting alone; and a pan-African

digital enterprise development fund providing capitalisation for African-owned AI platforms seeking to achieve the continental scale necessary to compete with foreign incumbents whose advantages derive from global user bases and data pools. The evidence base is the Policy Gaps analysis in Section 2D, which confirms that no continental coordination mechanism currently prevents African countries from undercutting each other's digital sovereignty protections, and the governance trap identified in Finding 4, which requires institutional solutions at a scale exceeding any single national regulator's capacity.

8. CONCLUSION

This paper examined the effect of artificial intelligence on telecommunications and the digital economy in Africa through Platform Regulatory Theory and Digital Colonialism Theory, presenting a Sovereignty Erosion Flow tracing the three-phase transition from partial sovereignty to structural dependency, and a Platform Power Audit Grid anchored to empirical market concentration percentages. The Erosion Flow confirms that sovereignty loss is directional and self-reinforcing, currently in Phase 3 structural dependency across all five dimensions in all five focus countries. The Audit Grid confirms that five of seven digital economy sectors are in the monopolistic category for platform concentration, with zero adequate governance response. The central contribution is the identification of the African AI digital sovereignty deficit: the structural condition in which AI systems governing Africa's digital economy are designed, owned, and operated by foreign corporations, leaving African states and citizens as platform dependents rather than digital economy sovereigns. The paper proposes a seven-pillar digital industrial policy framework, with four high-priority pillars, data sovereignty legislation, AI platform market power standards, content algorithm accountability, and African AI infrastructure investment, all of which can be initiated through existing regulatory authority. Future research should evaluate the effectiveness of data localisation requirements in building genuine African AI capability rather than merely shifting foreign-controlled processing to African territory.

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10. DECLARATIONS

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