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Leveraging Artificial Intelligence for Strategic Leadership and Institutional Capacity in Somalia: Lessons from Estonia and Rwanda

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Abstract

Artificial intelligence is reshaping public administration worldwide, yet the scholarship on AI governance remains concentrated on advanced and rapidly emerging economies, leaving fragile, post-conflict states largely absent from the analytical record. This article addresses that gap by asking how Somalia can use AI to strengthen strategic leadership and institutional capacity, drawing comparative lessons from Estonia and Rwanda. Using a qualitative comparative design, the study analyses national AI strategies, institutional records, and government programs across the three cases through content analysis and structured, focused comparison. The findings show that Estonia, Rwanda, and Somalia converge on an ethics-oriented rather than rule-based regulatory posture, but diverge sharply in institutional maturity, the sequencing of governance investment, and the degree to which hybrid public-private arrangements generate accountability rather than an accountability vacuum. Somalia's nascent institutions, principally the Somali National AI Center and the Somalia Data Protection Authority, reveal functional indetermination as a structural condition rather than a deliberate governance choice. Strategic leadership, understood in this study as the demonstrated capacity of senior officials and institutions to formulate, prioritize, communicate, and sustain coherent long-term governance visions in the face of institutional constraints, is identified as the primary explanatory variable differentiating the three governance trajectories examined. The study concludes that Somalia's most urgent priority is not the drafting of a comprehensive national AI strategy but the formalization of clear mandates, sequencing logic, and accountability mechanisms, offering a context-sensitive contribution to the emerging literature on AI governance in fragile states.

Keywords: Artificial intelligence governance, Strategic leadership, Institutional capacity, Hybrid governance, Somalia, Estonia, Rwanda.

1. Introduction

Artificial intelligence (AI) has rapidly emerged as a defining force in the reconfiguration of state power, public administration, and institutional governance. Much as Vladimir Putin's declaration that whoever leads in AI will "rule the world" (RT, 2017) foregrounded the geopolitical stakes of AI primacy, the implications of this technology extend far beyond great-power rivalry. For fragile, post-conflict, and low-income states where institutional legitimacy remains contested and administrative capacity is structurally deficient, AI presents a dual imperative: a considerable opportunity for developmental leapfrogging and an acute risk of entrenching pre-existing inequalities if harnessed without strategic intent or institutional preparedness (Khan et al., 2024; Aderibigbe et al., 2023).

By 2020, more than thirty nations had initiated formal discussions on national AI strategies, with seventeen already advancing implementation (Radu, 2021), yet the overwhelming majority are located in the Global North, where the enabling conditions for AI, digital infrastructure, human capital, institutional coherence, and regulatory frameworks, are already in place (Demaidi, 2025; Fatima et al., 2020). This asymmetry reflects deepening structural disparities in the global distribution of technological capability, and low-income countries remain disproportionately underrepresented in AI research agendas even as they stand to gain the most from well-calibrated deployment in governance, health, and education (Khan et al., 2024). For Africa, scholars describe a historically contingent "last call" to harness AI as a vehicle for escaping enduring development constraints, contingent on inclusive institutions and adaptive policy frameworks (Arakpogun et al., 2021; Fidan, 2025).

Within this context, Somalia occupies a particularly instructive position. Emerging from decades of civil conflict and fragmented governance, Somalia's federal institutions are in a formative stage, contending simultaneously with state-building imperatives and the pressures of a rapidly digitizing international environment. Strategic leadership, defined in this study as the demonstrated capacity of senior officials and institutions to formulate, prioritize, communicate, and sustain coherent long-term governance visions in the face of institutional constraints (Goralski & Tan, 2020; Kauzya, 2020), is widely regarded as a precondition for effective AI governance. This definition, which foregrounds volition, sequencing capacity, and institutional persistence alongside vision, distinguishes strategic leadership from the related but analytically distinct concepts of political will (which concerns commitment), bureaucratic capacity (which concerns implementation competence), and institutional design (which concerns structural arrangements). Operationally, strategic leadership is assessed in this study through three observable indicators: (1) the presence of cabinet-level endorsement and sustained resource allocation for AI governance; (2) the coherence and sequencing logic of formal governance documents; and (3) the establishment of accountable institutions with explicit mandates. Yet Somalia's public sector remains characterized by acute capacity deficits, low digital literacy, limited data infrastructure, and governance fragility, all of which constrain its ability to translate AI's theoretical promise into operational reality.

The discourse on AI and governance in African contexts has long been linked to macro-level aspirations, smart cities, fintech, e-government, without adequate attention to the micro-institutional foundations that determine whether such technologies embed sustainably in state structures (Arakpogun et al., 2021; Malatji, 2026). As scholarship shifts from purely technological perspectives toward societal transformation and institutional change (Zuiderwijk et al., 2021; Madan & Ashok, 2023), the focus on digital infrastructure and ethics has overshadowed the equally critical question of *strategic leadership* as an institutional driver of AI adoption. This study addresses that gap through the following research question: How can Somalia use AI to strengthen strategic leadership and institutional capacity, and what comparative lessons can be drawn from Estonia and Rwanda?

This paper advances three contributions beyond existing scholarship. The first, and most distinctive, is theoretical: it extends Radu's (2021) hybrid governance framework into fragile post-conflict state contexts, revealing that functional indetermination in such settings constitutes a *structural governance deficit* rather than a deliberate design choice, and proposing a developmental supplement to the framework that captures the accountability-generating capacity of hybrid arrangements across institutional contexts. Existing applications of the framework (Radu, 2021; Taeihagh, 2021; Ulnicane et al., 2021) have been confined to advanced and emerging economies; this study extends its analytical reach to a category of state hitherto absent from the comparative AI governance literature. The second contribution is empirical: it generates the first comparative scholarly analysis of AI governance configurations spanning a digitally mature benchmark state (Estonia), an African frontrunner (Rwanda), and

a fragile post-conflict case (Somalia), producing a structured comparative matrix against which Somalia's trajectory can be assessed and future cases benchmarked. The third contribution is applied: it derives actionable sequencing priorities for Somalia's AI governance agenda from the comparative evidence, addressing a policy demand that existing generic frameworks for developing-country AI governance (Demaidi, 2025; Frimpong, 2025; Khan et al., 2024) have not met with the contextual specificity this case requires.

This study focuses on the Federal Government of Somalia (FGS) and its associated federal member states as the primary unit of institutional analysis, for three reasons: the FGS holds internationally recognized sovereign authority over AI-relevant policy domains; UNESCO's ongoing AI Readiness Assessment is directed at the federal level; and SNAIC operates under the federal Ministry of Communications and Technology. A full sub-national comparative analysis lies beyond this article's scope but is identified in Section 6 as a priority for future research.

The argument proceeds as follows. Section 2 presents the theoretical framework, followed by a focused review of the literature on AI governance trajectories relevant to the three cases. Section 3 describes the comparative qualitative design, data sources, and analytical procedures. Section 4 presents findings across Estonia, Rwanda, and Somalia. Section 5 discusses these findings through the study's conceptual framework, identifying transferable lessons and their contextual conditionalities. Section 6 concludes by summarizing implications for scholarship and policy and proposing a forward-looking research agenda.

2. Theoretical Framework and Literature Review

2.1 Theory

This study is anchored in three complementary theoretical perspectives. The primary analytical lens is Radu's (2021) hybrid governance framework, which conceptualizes AI governance as the product of plural, contested, and structurally embedded configurations of public, private, and international institutional logics. The framework draws on two core analytical dimensions: (1) the stage at which hybridization emerges in the governance lifecycle, and (2) the redefinition of actors' roles through what Graz (2006) terms "functional indetermination", the process by which tasks once assigned to the polity become transposable to technical and scientific authorities. The framework predicts that where hybridization is advanced and institutional foundations are strong, public and private actors converge on a "common horizon" in which governance roles are blurred but accountable. Where hybridization is nascent and institutional foundations are weak, functional indetermination risks generating an accountability vacuum rather than a shared governance purpose.

This study applies the framework across three governance contexts and proposes a developmental supplement: a dimension capturing not only the type of hybrid arrangement present but its accountability-generating capacity relative to the institutional context in which it operates. This supplement responds to a recognized limitation in the existing literature, that the hybrid governance framework was developed through analysis of advanced and emerging economies and has not been tested in fragile or post-conflict state contexts where functional indetermination may be structural rather than deliberate. Three propositions follow from the augmented framework and guide the comparative analysis:

P1: Countries with mature hybrid governance arrangements and strong foundational institutions will exhibit AI governance configurations in which public and private roles are blurred but subject to clear accountability mechanisms (common horizon hybridity).

P2: Countries with developing hybrid governance arrangements and moderate institutional foundations will exhibit compressed AI governance trajectories when political will provides directional coherence, but at the cost of residual functional indetermination in mandate design.

P3: Countries in fragile or post-conflict contexts will exhibit nascent hybrid governance arrangements in which functional indetermination is a structural condition, generating accountability vacuums that no volume of ethics-oriented strategy documents can resolve absent prior institutional sequencing.

The second theoretical perspective is the institutional logics framework (Friedland & Alford, 1991; Skelcher & Smith, 2015), which directs attention to the organizing principles and ideological foundations of institutions that shape actors' identities, priorities, and accountability relations. This perspective explains why AI governance actors behave as "carriers of multiple institutional logics" and why the coexistence of public, private, and international logics in hybrid arrangements produces governance configurations that reflect power asymmetries as much as deliberate design choices. Applied to Somalia, this framework surfaces the risk that external actors' institutional logics, those of UNESCO, GIZ, the World Economic Forum, or bilateral technology partners, may occupy the governance space that domestic institutional logics have not yet developed sufficient capacity to fill.

The third perspective is Rodriguez and Canclini's (1997) process-oriented conceptualization of hybridization as an ongoing, contingent, and politically contested reconfiguration of authority in response to changing conditions. This dynamic complement to the more structural hybrid governance and institutional logics frameworks draws attention to the fact that Somalia's AI governance landscape is not a fixed configuration but an emergent one, whose trajectory remains genuinely open and whose future shape will be determined by the sequencing of institutional investments made in the near term. Together, the three frameworks generate an integrated analytical lens capable of capturing the structural conditions, actor dynamics, and developmental trajectories relevant to AI governance across the institutional contexts under examination.

2.2 The Evolution of AI Governance: From Private Actors to National Strategies

Artificial intelligence as an organized field of inquiry traces its origins to the 1956 Dartmouth workshop, but it was the private sector's response to government funding withdrawals during the first "AI winter" of the early 1970s that established AI as a driver of industrial, commercial, and social application (Radu, 2021). The governance scholarship on AI has grappled with how public authority can be recovered in a domain characterized by private-sector dominance. Radu (2021) frames this as a contested reconfiguration of "state-society-market interactions." Jobin et al. (2019) and Taeihagh (2021) extend this concern, observing that AI governance is frequently politicized to serve the interests of a few powerful centers of global power, a dynamic particularly consequential for post-conflict states such as Somalia that lack the institutional resources to contest dominant AI paradigms on their own terms.

The proliferation of national AI strategies from 2017 onward represents an attempt by states to reassert leadership. Radu (2021) provides the first comprehensive comparative analysis, showing that such strategies share four properties: purposefulness, resource-sensitivity, flexibility, and context-specificity, and that ethics-oriented frameworks predominate over binding regulation, a preference Bietti (2020) terms "ethics washing," the instrumentalization of ethical language to forestall harder regulatory commitments. AlgorithmWatch (2020) reinforces this critique, reporting that across 160 sets of AI ethical principles, most binding and voluntary commitments were proposed by the private sector, raising persistent questions about enforceability across national contexts.

2.3 Hybrid Governance Frameworks and Institutional Logics

As elaborated in the theoretical framework above, the hybrid governance concept is central to this study's analytical design. Applied to national AI governance, Radu (2021) identifies two decisive dimensions: the stage at which hybridization emerges, and the redefinition of actors'

roles through functional indetermination (Graz, 2006). For Somalia, this implies that public-private arrangements must be diagnosed for whether they represent genuine co-production of governance capacity or de facto privatization of public functions (Jobin et al., 2019). The institutional logics perspective further directs attention to how the coexistence of diverse actors and their values in hybrid arrangements shapes accountability outcomes (Skelcher & Smith, 2015).

2.4 AI, Strategic Leadership, and State Capacity in Developing Countries

The transferability of governance models designed for advanced economies to developing-country contexts remains an open question. Radu (2021) explicitly flags this gap; subsequent literature documents how AI is increasingly conceived as a vehicle for "leapfrogging" traditional development stages in resource-constrained African economies, though such ambitions often mask weak infrastructure, limited institutional capacity, and external technological dependency (Frimpong, 2025). Over-reliance on advanced digital platforms can widen urban-rural gaps by prioritizing services suited to areas with strong institutional support, limiting AI's equity-enhancing potential precisely where it is most needed (Frimpong, 2025).

Strategic leadership, as operationalized in Section 1, is central to explaining variation in AI adoption across comparably developed states. Kauzya (2020) identifies institutional weakness as the foremost challenge to national transformation in Somalia, echoing a broader literature in which political will, leadership commitment, and sustained investment in digital infrastructure are foundational preconditions for effective AI governance (Dreyling et al., 2024; e-Estonia, 2023). In Africa, Rwanda stands out as an early mover, with its National AI Policy (The Future Society, 2023) explicitly aligned with Vision 2050 through multi-stakeholder consultations (Frimpong, 2025; Mhlanga, 2026; United Nations Development Programme, 2026). By contrast, Somalia has no enacted AI-specific legislation, and governance remains at the assessment stage, with SNAIC operating without binding regulatory authority (Verma, 2026).

2.5 Estonia as a Global Benchmark for AI-Enabled Public Administration

Estonia's trajectory as a pioneer of AI-enabled e-governance has attracted substantial scholarly attention. Dreyling et al. (2024) examine Estonia's Bürokratt initiative through the Technology-Organizational-Environmental (TOE) framework, finding that organizational flexibility, open collaboration, and citizen-centric design are pivotal to AI-enabled public services. Scholarly commentary nonetheless cautions against uncritical adoption of the "Estonia model": the European Commission (2026) attributes Estonia's success partly to its small population (approximately 1.3 million), centralized governance architecture, and early sustained infrastructure investment, advantages not easily replicated in post-conflict or low-income settings. The enduring institutional lesson is that digital governance depends less on technological sophistication than on prior citizen trust, coherent legal frameworks, and a public-sector culture of continuous capability development (e-Estonia, 2023).

2.6 Key Debates, Gaps, and the Gap This Study Addresses

Four debates define the field. The first concerns whether states should prioritize ethics-oriented frameworks or binding regulation; the literature converges on the view that ethics-based approaches, while flexible, are structurally vulnerable to capture by private actors (Bietti, 2020). The second concerns distributional consequences: Radu (2021) observes that OECD AI principles "have come short of reforming public governance frameworks and addressing the needs of developing countries," a gap amplified by subsequent work documenting how US-China tech geopolitics marginalize African governance priorities (Plantinga et al., 2024; Kwarkye, 2025). The third concerns leapfrogging: Rwanda's fintech and digital-identity sectors provide proof-of-concept, but institutional adoption is more constrained by weakness and

infrastructure asymmetry than technology optimism allows (Frimpong, 2025). The fourth concerns external partnerships: international partnerships played a catalytic but carefully managed role in both Rwanda's and Estonia's AI governance journeys (United Nations Development Programme, 2026; e-Estonia, 2023), yet the risk of "unwanted technological dependency" is acutely relevant for Somalia.

The present study advances beyond these existing contributions in three specific respects. First, where Radu (2021), Ulnicane et al. (2021), and Taeihagh (2021) apply the hybrid governance and institutional logics frameworks exclusively to advanced and transitional economies, this study extends them to a fragile post-conflict state, revealing dynamics, structural functional indetermination, accountability vacuums, external institutional logic dominance, that are invisible in analyses confined to higher-capacity contexts. Second, where Frimpong (2025) and Khan et al. (2024) address AI in resource-constrained African economies at a general level, this study provides a contextualized institutional analysis of Somalia specifically, generating the kind of country-level precision that general frameworks cannot supply. Third, where Arakpogun et al. (2021) and Ayana et al. (2024) identify Africa-wide AI governance challenges, this study moves from diagnosis to comparative sequencing prescription, offering a structured roadmap grounded in the Estonia-Rwanda contrast rather than general recommendations. A significant geographic gap persists: post-conflict African states such as Somalia have received almost no comparative scholarly treatment in the AI governance literature. Somalia's active Readiness Assessment, SNAIC's emerging mandate, and the National Transformation Plan 2025-2029 together create a policy landscape demanding rigorous academic engagement that this article directly addresses.

2.7 Rationale for the Comparative Analysis

Three theoretical perspectives anchor this study's methodology, as elaborated in Section 2.1: Radu's (2021) hybrid governance framework; the institutional logics perspective (Skelcher & Smith, 2015); and Rodriguez and Canclini's (1997) process-oriented conceptualization of hybridization. Estonia and Rwanda are selected for theoretically grounded reasons elaborated in Section 3.2.

3. Methodology

3.1 Research Design and Epistemological Orientation

This study adopts a qualitative comparative research design, grounded in an interpretivist epistemological orientation, to assess how AI governance is configured in Estonia, Rwanda, and Somalia and to extract policy-relevant lessons for the latter. It analyses national AI strategies, institutional records, and government programs in their final published form, because such documents are carefully worded in ways that embed collective thinking across levels of government and are therefore well suited to qualitative content analysis (Radu, 2021). Following Radu (2021), the focus is on how configurations of interests and governance decisions define a national approach to AI, with particular attention to hybrid governance elements, emerging institutional logics, and the redefinition of public and private roles.

3.2 Case Selection: A Two-Step Design

A two-step methodology, following Radu (2021), was used to select cases and analytical dimensions. First, Estonia, Rwanda, and Somalia were selected from a broader universe of national comparators on theoretically grounded criteria combining elements of Most-Similar and Most-Different Systems Design (Anckar, 2008). The repositories consulted include the Oxford Insights AI Readiness Index, the UNDP's 2026 assessment of Rwanda's AI potential, and UNESCO's 2025 AI Readiness Assessment for Somalia. Case selection was based on three exogenous, prior characteristics that precede and are analytically independent of the

governance orientation outcomes under investigation: (1) *institutional development stage*, Estonia as a mature e-governance state with decades of digital infrastructure investment predating the AI governance period under analysis; Rwanda as a post-conflict developing state with documented institutional consolidation since 1994; and Somalia as a fragile post-conflict state at the earliest stage of federal institutional reconstruction; (2) *geographic and developmental representativeness*, the three cases span the Global North, sub-Saharan African frontrunner, and fragile-state categories, providing a developmentally structured comparison rather than a convenience sample; and (3) *documentary availability*, all three cases possess at least a minimum corpus of publicly available governance documentation, a prerequisite for the content-analytic methodology employed.

Table 1. Primary governance documents included in the analysis.

Date/Period	**Document/Strategy**	**Country**	**Issuing Authority**
2014-present	e-Estonia Digital Society Programme and AI Policy Framework	Estonia	Ministry of Economic Affairs and Communications; RIA
2020	Digital Agenda 2030	Estonia	Government of Estonia / Ministry of Economic Affairs
2024 (pilot)	Bürokratt National AI Virtual Assistant Initiative	Estonia	Ministry of Economic Affairs and Communications
2017	National Strategy for Transformation (NST1) 2017-2024	Rwanda	Government of Rwanda, Ministry of Finance
2020	Smart Rwanda Master Plan	Rwanda	Ministry of ICT and Innovation
2023	National AI Policy	Rwanda	Ministry of ICT and Innovation; C4IR Rwanda
2021	Law No. 058/2021 on the Protection of Personal Data and Privacy (Rwanda)	Rwanda	Government of Rwanda
2025-2029	Somalia National Transformation Plan 2025-2029	Somalia	Federal Government of Somalia
2025	AI Readiness Assessment (UNESCO, ongoing)	Somalia	UNESCO Regional Office for Eastern Africa; MoCT
2025-present	Somali National AI Center (SNAIC) Mandate and Programme Documents	Somalia	Ministry of Communications and Technology
2023	Somalia Data Protection Act	Somalia	Federal Government of Somalia

3.3 Data Sources and Collection

The analysis draws on four categories of documentary evidence: the primary governance documents in Table 1; peer-reviewed academic literature; reports from international organizations including the OECD Principles on AI (OECD, 2019), UNDP's 2026 Rwanda assessment, UNESCO's 2025 Somalia assessment, and World Bank digital-development diagnostics; and credible grey literature, government press releases, institutional websites, and

summit records, capturing implementation activities not yet reflected in peer-reviewed output. Grey literature sources, including organizational websites (SNAIC, MINICT) and press releases, are treated with explicit methodological caution: claims made by institutions whose mandates are under analysis are triangulated against independent assessments (UNESCO, UNDP, Oxford Insights AI Readiness Index) wherever available. Where triangulation was not possible, findings are presented with explicit uncertainty language rather than as established fact. Document collection was completed on 30 June 2026. Findings reflect the state of AI governance documentation available as of that date. The rapidly evolving nature of Somalia's governance landscape, particularly the ongoing UNESCO Readiness Assessment and SNAIC's developing mandate, means that specific institutional details may have evolved subsequent to this cut-off; the study's analytical conclusions, which concern institutional sequencing logic rather than specific policy provisions, are expected to remain valid beyond the collection date.

3.4 Analytical Techniques

Data analysis combined qualitative content analysis and structured, focused comparison. Content analysis followed Mayring's (2000) theory-guided approach, proceeding from categories derived from the hybrid governance framework, the stage at which hybridization emerges, and the redefinition of actors' roles, while remaining inductively open to unanticipated themes. Thematic analysis, following Braun and Clarke's (2006) six-phase framework, complemented this by identifying recurring patterns across the full corpus, yielding three overarching themes: AI governance structures and hybrid configurations; political will and strategic leadership as enabling conditions; and infrastructure, capacity, and institutional readiness.

The coding procedure proceeded in four stages. Stage 1 (deductive coding): the two dimensions of the hybrid governance framework (hybridization stage; functional indetermination) were used to generate an a priori coding scheme. Stage 2 (inductive coding): documents were read in full and emergent codes not anticipated by the deductive scheme were recorded separately. Stage 3 (thematic clustering): codes were grouped into the three overarching themes reported in Section 4. Stage 4 (comparative matrix construction): coded segments were entered into the comparative matrix (Table 2) for structured cross-case analysis. All coding was conducted by the author; a sample of 15% of coded passages (selected randomly across all three country cases) was independently reviewed to assess consistency.

3.5 Validity, Reliability, and Ethical Considerations

Trustworthiness follows Lincoln and Guba's (1985) framework of credibility, transferability, dependability, and confirmability. Credibility rests on methodological triangulation across primary documents, peer-reviewed literature, international reports, and grey literature, reducing over-reliance on any single source, and is further strengthened by the explicit use of Radu's (2021) hybrid governance framework to anchor interpretive decisions. Transferability is served through contextually rich case description and explicit acknowledgement of structural differences between the three countries. Dependability is achieved through transparent documentation of all collection and analysis decisions, and confirmability through reflexive engagement with the researcher's positionality. The documentary corpus is asymmetric across cases in depth rather than number: Table 1 lists three documents for Estonia, four for Rwanda, and four for Somalia, but the Somali documents are considerably thinner in content. This asymmetry reflects the comparatively thinner documentary record available for Somalia and produces analytical implications that are explicitly acknowledged throughout the Findings: claims about Somalia's governance configuration are presented as more inferential and tentative than those about Estonia and Rwanda, and the strength of comparative conclusions is modulated accordingly.

As the study relies exclusively on publicly available secondary sources, no primary ethics approval was required. The study adheres to principles of academic integrity, accurate attribution, avoidance of misrepresentation, and sensitivity to Somalia's post-conflict political context. Acknowledged limitations include potential publication bias in the academic literature, the possibility that rapidly evolving policy developments may not yet be reflected in available documents, and the structural constraints of applying governance lessons from Estonia, a small European state with decades of institutional investment, to a fragile post-conflict African setting. These limitations are revisited in the conclusion.

4. Results

This section presents findings across the three cases, organized around the three themes derived from the comparative content analysis: AI governance structures and hybrid configurations (4.1-4.4); political will and strategic leadership (4.5); and implications for Somalia (4.6). The findings are synthesized in Table 2, which maps each case against the study's seven analytical dimensions and is introduced here to orient the reader before the case-by-case analysis. Table 2 should be read alongside the narrative analysis: the matrix captures configurations at a point in time, while the narrative captures the process dynamics through which those configurations emerged.

4.1 Broad Trends: Convergences across the Three Cases

Most governance documents analyzed embrace a coordinated approach with a centralized vision of AI development embedded in broader national transformation priorities, with plural institutional logics consistently present, often by deliberate design. This is most visible in Rwanda's National AI Policy 2023, led by the Ministry of ICT and Innovation with participants including the Rwanda Utilities Regulatory Authority, GIZ FAIR Forward, C4IR Rwanda, The Future Society, and more than 120 stakeholders (The Future Society, 2023). Estonia's Kratt AI and Data Action Plan 2024-2026 similarly combines public-sector transformation, private-sector partnership incentives, and R&D priorities across five interdependent pillars. All strategies propose the adoption and industrialization of AI in priority sectors. Rwanda's policy identifies agriculture, healthcare, education, and public services as key priority areas (Ministry of ICT & Innovation, 2023). Similarly, Somalia's SNAIC identifies Somali natural language processing, agriculture, healthcare, education, livestock, and the blue economy as its core priority domains (Somalia National AI Center, 2024).

4.2 Security and Surveillance: A Consequential Silence

What is absent from all three strategy documents is equally instructive, and, in Somalia's case, analytically consequential. Despite AI's growing relevance to national security and surveillance, none of the three governance frameworks engages substantively with security-related AI applications, even though the 2019 AI Global Surveillance Index identified at least 75 countries actively using AI for surveillance through smart-city platforms, facial recognition, and smart policing (Feldstein, 2019). In Estonia and Rwanda, this silence is mitigated by adjacent institutional protections: Estonia's alignment with the EU AI Act provides an implicit high-risk application framework that covers law-enforcement AI, while Rwanda's Data Protection Law 058/2021 provides a partial constraint on state surveillance uses of personal data.

In Somalia, this silence carries considerably higher risk. Somalia's active conflict context, with ongoing al-Shabaab insurgency, clan-based security dynamics, and a contested federal authority structure, creates conditions in which security sector actors, including international peacekeeping forces, private security contractors, and intelligence-sharing partners, may be early adopters of AI-enabled surveillance and targeting tools well before domestic governance frameworks are established to regulate them. The absence of any AI-

specific regulation, combined with a Somalia Data Protection Authority that is nascent in enforcement capacity (Verma, 2026), means that AI surveillance adoption in Somalia's security sector would currently occur in a governance vacuum. This is precisely the accountability vacuum that the hybrid governance framework's functional indetermination concept predicts: in the absence of clear mandates and rule-making authority, powerful actors, including international security partners, fill the space according to their own institutional logics rather than Somalia's public interests. The findings therefore suggest that Somalia's AI governance agenda must include security applications explicitly, and should do so before deployment pressure from security sector actors makes retrospective regulation politically more difficult. This represents an additional sequencing priority not acknowledged in existing AI governance prescriptions for fragile states.

4.3 The Drafting Process and Corporate Influence

A second finding concerns the diversity of drafting processes and the structural role of private-sector actors in shaping content. In Rwanda, the National AI Policy was led by MINICT and RURA but substantially co-authored by GIZ FAIR Forward and The Future Society, a private organization with strong industry links that conducted over 35 expert interviews and 8 stakeholder surveys (The Future Society, 2023); the resulting Responsible AI Office is housed within MINICT but charged with coordinating stakeholders across institutions, blurring the boundary between government oversight and multi-stakeholder governance. This mirrors the global pattern Radu (2021) identifies, in which industry representatives typically constitute at least a third of government AI oversight bodies. In Estonia, the Bürokratt initiative involves state agencies, municipalities, and private contractors, creating hybrid roles that Dreyling et al. (2024) describe as "chatbot trainers" bridging technical and administrative domains.

One consequence of assigning industry and international NGOs a dominant drafting role is that hybridity is embedded from the outset without an explicit assumption of public-private power balance. SNAIC's international partnerships with universities and global technology institutions reflect a similar configuration in which external actors play a formative role before domestic regulatory frameworks are established, replicating the "growing boundary permeability" that "concerns not only sectors, but also practices and, crucially, knowledge" (Radu, 2021). This concentration of technical expertise in private and international hands is particularly acute in Somalia, where domestic AI expertise remains nascent.

4.4 Regulatory Orientations and Institutional Logics

Examining regulatory approaches reveals a strong preference for ethics-oriented frameworks over rule-based systems across all three cases. Rwanda's National AI Policy articulates beneficence, non-maleficence, autonomy, justice, and explicability as horizontal ethical principles (Ministry of ICT & Innovation, 2023; Regulations.ai, 2026). Estonia's Kratt Action Plans emphasize human-centered, trustworthy AI, relying on legal certainty measures and procurement requirements rather than categorical prohibitions. Somalia has yet to articulate any binding AI-specific ethical or regulatory framework; the 2023 Data Protection Act is the closest adjacent instrument, addressing automated processing in general terms rather than AI-specific risks (Verma, 2026). Scholarly commentary nevertheless cautions against uncritical celebration of Rwanda's ethics-first approach. Kwarkye (2025) documents how Rwanda's AI governance is shaped partly by political dynamics that prioritize state-directed development over civil society contestation, raising questions about the representativeness of the 120+ stakeholders in the AI Policy drafting process and the degree to which the Responsible AI Office will function as an accountability mechanism independent of executive direction. Ayana et al. (2024) similarly note that Rwanda's digital governance gains are concentrated in Kigali, with rural areas exhibiting substantially lower digital infrastructure and AI-readiness levels. These critiques do not negate Rwanda's status as a comparative frontrunner, but they counsel

against treating its governance model as a straightforward transplant prescription for Somalia, where governance legitimacy is more deeply contested and digital divides are more severe.

4.5 Variation in National AI Approaches: New Roles and Institutions

Central to this study's hybridization thesis, the positions of public and private sectors are not clearly defined across the documents analyzed, revealing a high degree of functional indetermination (Graz, 2006; Radu, 2021). Rwanda's Policy explicitly acknowledges this in its recommendation to establish a Responsible AI Office whose "competences are not clearly specified and remain dependent on the members selected" (Regulations.ai, 2026). Estonia's governance oscillates between integrating AI competences within existing ministries and creating new functions with vaguely defined mandates, exemplified by the planned AI Competence Centre. In Somalia, this common horizon remains aspirational: the September 2025 multi-stakeholder AI forum represented the first significant convening of government, academia, and private-sector actors around Somalia's AI future (Mhlanga, 2026), but no institutional vehicle capable of sustaining this shared horizon had been formally established by the data collection cut-off of 30 June 2026.

Institutionalization approaches also diverge. In Rwanda, existing ministries were charged with cross-sector coordination, supplemented by the standalone National AI Office and C4IR's real-time policy-experimentation function. Estonia directs research and innovation through existing bodies and new capacities including the Bürokratt team and planned Competence Centre. Both countries invested significantly in skills development: Rwanda through university AI-education partnerships and its National Skills Building Program (Ministry of ICT & Innovation, 2023), Estonia through the AI Leap 2025 programme introducing AI tools to all upper-secondary schools (Regulations.AI, 2026). Somalia has concentrated institutional attention in SNAIC and university-partnership workshops but has not yet established a sustained national skills-development framework or research-institution architecture comparable to either country.

What is missing across all three approaches, and most acutely in Somalia's, is a clear indication of who makes the rules, for how long, and by what accountability mechanism, the central governance deficit identified in the comparative literature on hybrid governance and functional indetermination (Radu, 2021; Graz, 2006; Skelcher & Smith, 2015).

Table 2. Comparative Summary of Findings: AI Governance Configurations across Estonia, Rwanda, and Somalia.

Dimension	Estonia	Rwanda	Somalia
Drafting Process	Multi-ministry via MEAC; open collaboration with private/research sectors	Led by MINICT/RURA; co-developed with GIZ, C4IR, The Future Society; 120+ stakeholders; Cabinet approved April 2023	UNESCO Readiness Assessment at inception; SNAIC coordinates with universities/global tech; no formal drafting process yet
Regulatory Orientation	Ethics-centred, human-centred AI; aligning with EU AI Act; legal certainty via procurement and impact assessments	Ethics-first with agile, risk-based regulation; regulatory sandboxing via C4IR; binding Data Protection Law 058/2021	No AI-specific regulation enacted; 2023 Data Protection Act as adjacent framework; assessment stage only

Strategic Leadership Indicators	Cabinet-level endorsement; sustained multi-year investment; coherent sequencing from X-Road/eID to AI layer	Cabinet resolution April 2023; Vision 2050 alignment; C4IR as sequencing vehicle	No cabinet-level AI endorsement to date; SNAIC mandate evolving; sequencing logic not yet formalized
New Institutions	AI Competence Centre (planned); distributed oversight via RIA; Bürokratt as hybrid vehicle; AI Leap 2025	National AI Office; C4IR (sandbox); Responsible AI Office mandated; National Skills Building Program	SNAIC (promotional/coordination, non-regulatory); Somalia Data Protection Authority (2024); no AI-specific regulatory body
Functional Indetermination	Present: oscillation between MEAC and new bodies; hybrid roles (chatbot trainers)	Present: RAI Office mandate unspecified; C4IR blurs public-private boundaries	Nascent but structural: SNAIC mandate/scope evolving; accountability frameworks absent; rule-making authority undefined
AI Surveillance/Security	EU AI Act high-risk categories provide implicit framework; not explicitly in strategy texts	Not addressed; law-enforcement applications ungoverned by AI-specific rules; Data Protection Act partial constraint	Not addressed; significant national-security context; no governance framework; highest accountability-vacuum risk
Hybridity Stage	Advanced: systemic property; common horizon institutionalized	Intermediate: state-directed; institutionalized via National AI Policy and RAI Office	Nascent: structural functional indetermination; institutional architecture to formalize arrangements absent

4.6 Implications for Somalia

The findings suggest Somalia faces a distinctive challenge: it must simultaneously build institutional foundations that Estonia and Rwanda developed over years or decades, navigate the functional indetermination inherent in AI's rapid evolution, and do so under the resource and capacity constraints of a post-conflict state. Three strategic implications follow. First, Somalia's current reliance on SNAIC as a promotional body without regulatory authority mirrors the early institutional stage both Estonia and Rwanda passed through before establishing dedicated oversight mechanisms with clear mandates; the priority is to formalize SNAIC's mandate with greater specificity rather than to build complex new institutions immediately. Second, Rwanda demonstrates that a common horizon approach can be operationalized at speed when political leadership provides clear direction; for Somalia, this points to the need for Cabinet-level political commitment to AI governance, analogous to Rwanda's April 2023 Cabinet resolution. Third, and as elaborated in Section 4.2, Somalia's AI governance agenda must explicitly address security-sector AI applications before deployment pressure makes retrospective regulation politically more difficult.

5. Discussion

5.1 Interpreting Findings through the Augmented Hybrid Governance Framework

The central theoretical proposition of this study is that AI governance in national contexts is not a straightforward regulatory act by the state but a plural, contested, and structurally embedded configuration of public, private, and international institutional logics (Radu, 2021). The comparative findings strongly confirm this proposition while revealing important gradations. In Estonia, hybridity has become a systemic property of the governance system itself. In Rwanda, state-directed hybridity is institutionalized in the National AI Policy's Responsible AI Office and in C4IR's dual function. In Somalia, hybridity is nascent and inchoate, representing the beginning of a multi-actor governance configuration without the institutional architecture to make it accountable.

These findings extend Radu's (2021) application of the hybrid governance framework to national AI strategies. Where Radu's analysis of advanced and emerging economies identified a "common horizon approach" in which market and state actions share goals and can no longer be disentangled, this study shows that such a common horizon cannot be assumed, it must be constructed through deliberate investment in institutional capacity, legal frameworks, and political leadership. In fragile or post-conflict contexts such as Somalia, where functional indetermination is a structural condition rather than a deliberate design choice, the hybrid governance framework reveals not merely a governance model in formation but a governance deficit that, if unaddressed, risks allowing private and international actors to consolidate authority over AI in ways that serve their own institutional logics rather than Somali public interests.

The developmental supplement proposed in Section 2.1 can now be specified more precisely from the comparative evidence. The supplement identifies three types of hybrid AI governance configuration along a developmental axis:

Type 1, Consolidated Common Horizon Hybridity (Estonia): Advanced institutional foundations; public and private roles blurred but subject to multi-layered accountability mechanisms (national law, EU regulation, democratic oversight); hybridity is a systemic governance property that has evolved over decades of institutional investment.

Type 2, State-Directed Developmental Hybridity (Rwanda): Intermediate institutional foundations; hybridity compressed by political will and international partnership; accountability mechanisms established but mandate specification remains partially indeterminate; risk of "ethics washing" if enforcement capacity does not develop in parallel with policy ambition.

Type 3, Structural Accountability-Vacuum Hybridity (Somalia): Nascent institutional foundations; hybridity reflects structural accommodation to weak state capacity rather than deliberate design; functional indetermination generates accountability vacuums rather than common horizons; external actors' institutional logics dominate the governance space in the absence of sufficient domestic institutional agency.

These three types are not fixed developmental stages through which states must sequentially pass, but analytically distinguishable configurations whose key differentiator is the accountability-generating capacity of hybrid arrangements relative to the institutional context in which they operate. Future research should test whether this typology is generalizable to other fragile-state AI governance contexts, including Sierra Leone, South Sudan, and Somaliland's distinct sub-national governance experiment.

5.2 Explaining Similarities and Differences across Cases

The most significant convergence across the three cases is the shared preference for ethics-oriented over rule-based AI governance, reflecting a global pattern in which reluctance to regulate strictly at an early stage is driven by fear of stifling innovation and by the difficulty of

managing rapidly evolving technological uncertainty (Radu, 2021; Taeihagh, 2021). For developing and post-conflict states, this convergence carries particular risk: an ethics-first approach without enforcement mechanisms reproduces the "ethics washing" vulnerability (Bietti, 2020), potentially enabling private and international actors to shape AI governance in their own image before domestic institutional capacity is sufficient to contest or redirect these arrangements.

The most consequential divergence lies not in ideological orientation but in institutional maturity and the sequencing of governance investment. Estonia's decades-long digital infrastructure investment created technical and organizational preconditions for AI adoption that Rwanda's more compressed trajectory, and Somalia's barely emergent institutional landscape, have not replicated. The Rwanda-Somalia comparison is theoretically important because it reveals that post-conflict status alone does not determine AI governance trajectory. Rwanda's National AI Policy emerged twenty-nine years after the 1994 genocide, the product of sustained political leadership, institutional reconstruction, and strategic partnership across that entire period. Somalia's post-conflict institutional reconstruction is more recent, more contested, and more heavily externally supported, conditions that affect both the pace at which foundational governance capacities can be built and the degree to which hybrid arrangements can be shaped by domestic rather than international institutional logics.

5.3 Implications for Theory

The study makes three theoretical contributions. First, it extends Radu's (2021) hybrid governance framework to a fragile post-conflict state context, demonstrating both its analytical utility and its limitations, and proposes a developmental typology (Type 1-3 above) that captures the accountability-generating capacity of hybrid arrangements across institutional contexts. Second, the study contributes to the emerging debate on AI governance in the Global South and fragile states. By demonstrating that Somalia's AI governance challenges are rooted in the prior conditions for legitimate hybrid governance, citizen trust, legal certainty, institutional agency, rather than reducible to a technology deficit, the study advances a more institutionally grounded understanding of what AI governance readiness means in low-capacity contexts. Third, the study's application of Rodriguez and Canclini's (1997) process-oriented conceptualization of hybridization offers a corrective to static structural analyses, drawing attention to the ongoing, contingent, and politically contested character of hybrid governance formation.

5.4 Implications for Policy and Practice

The study's policy implications operate at three levels. At the level of Somalia's immediate priorities, the comparative analysis suggests the most urgent need is the formalization of SNAIC's mandate with explicit regulatory authority and accountability mechanisms, since functional indetermination is the most pervasive risk in nascent AI governance configurations. Establishing clear rules about who makes AI governance decisions, for how long, and by what accountability mechanism would represent a more foundational advance than adopting ethics principles without enforcement infrastructure. Additionally, as identified in Section 4.2, Somalia should explicitly incorporate AI security and surveillance governance into its near-term agenda, given the accountability vacuum that currently exists in this domain.

At the level of international AI governance design, the findings reinforce Radu's (2021) concern that intergovernmental frameworks have "come short of reforming public governance frameworks and addressing the needs of developing countries." The Estonia-Rwanda comparison demonstrates that international partnerships can powerfully accelerate AI governance capacity when embedded in state-directed strategies with clear domestic ownership. When such partnerships precede rather than support domestic institutional capacity, they risk producing the ethics-washing and function-indetermination outcomes the hybrid

governance literature warns against. For partners supporting Somalia's AI governance journey, this implies sequencing support around institutional capacity building, strengthening the SDPA, completing the UNESCO Readiness Assessment, and supporting a domestically driven national AI strategy, before advancing to deployment programs.

At the level of practice, the study highlights the value of what Estonia terms the "once-only principle" and what Rwanda operationalizes through C4IR's regulatory sandboxing: governance arrangements allowing governments to learn by doing within bounded, monitored environments before committing to irreversible institutional designs. For Somalia, the most feasible vehicle for such a sandbox arrangement would be a joint pilot between SNAIC, the Somalia Data Protection Authority, and a selected federal ministry, such as the Ministry of Health, where SNAIC has already indicated sector interest, to govern a bounded AI application (for example, an AI-assisted medical records triage system) under explicit, publicly documented rules covering mandate, accountability, data protection compliance, and sunset clause. Such a pilot would generate domestic evidence and institutional learning before national policy frameworks are finalized, while simultaneously building the technical and regulatory capacity that broader AI governance will eventually require. The pilot model guards against the premature institutional lock-in that the literature identifies as a persistent challenge for late-adopting states (Mhlanga, 2026; United Nations Development Programme, 2026)**.**

5.5 Relation to Previous Studies

The findings confirm and extend several conclusions from prior scholarship. The predominance of ethics-oriented over rule-based governance replicates the pattern Radu (2021) identifies across twelve advanced-economy national AI strategies, further confirmed by Ulnicane et al. (2021) across 49 European and US policy documents. The observation that oversight bodies tend to have vaguely defined mandates and underrepresent civil society aligns with Radu's (2021) finding that accountability frameworks "remain difficult to establish" in hybrid AI governance configurations. The study also confirms Dreyling et al.'s (2024) finding that organizational flexibility, open collaboration, and citizen-centric design, rather than technological sophistication per se, are decisive for AI governance success, extending this from an advanced-economy context to a framework spanning a transitional and a fragile state. Finally, the identification of technological leapfrogging as achievable but structurally constrained in post-conflict African contexts confirms Frimpong (2025) and Mhlanga (2026) while adding the analytical precision of the augmented hybrid governance framework to explain why states like Rwanda have compressed the AI governance development cycle while others like Somalia face more fundamental prerequisite challenges.

6. Conclusion

This article set out to answer a deceptively simple question with considerable practical urgency: how can Somalia use artificial intelligence to strengthen strategic leadership and institutional capacity, and what comparative lessons can be drawn from Estonia and Rwanda? The comparative analysis suggests an answer that runs against the grain of much conventional AI-and-development discourse. Somalia's path to effective AI governance is not primarily a question of acquiring technology, drafting an ambitious national strategy, or securing external investment, though all of these may eventually matter. It is, first and foremost, a question of institutional sequencing: building the foundational governance capacities, clear mandates, accountability mechanisms, legal certainty, and citizen trust, without which any AI strategy risks becoming an aspirational document disconnected from administrative reality.

The comparative cases of Estonia and Rwanda illuminate different points along this developmental spectrum. Estonia demonstrates that hybridity between public and private authority can, over decades, become a systemic and largely benign property of a governance

system, provided it is accompanied by sustained investment in legal coherence, digital infrastructure, and a public-sector culture of continuous capability development. Rwanda offers Somalia a more proximate and instructive model: its trajectory shows that a developmental state can compress the AI governance timeline considerably when three conditions converge, sustained political commitment expressed through cabinet-level endorsement, a deliberate sequencing logic that prioritizes foundational data governance before sector-specific deployment, and carefully managed international partnerships that catalyze rather than substitute for domestic institutional ownership. At the same time, the Rwanda model should not be adopted uncritically: its governance gains are geographically concentrated, its civil society inclusion remains partial, and its political economy of centralized state direction raises questions about transferability to Somalia's more pluralistic, if also more fragile, governance environment (Kwarkye, 2025; Ayana et al., 2024).

Set against these two trajectories, Somalia's current position is best understood not as a deficit to be lamented but as an early-stage governance configuration whose future shape remains genuinely open. The Somali National AI Center, the Somalia Data Protection Authority, the ongoing UNESCO AI Readiness Assessment, and the National Transformation Plan 2025-2029 together represent the initial scaffolding of an AI governance ecosystem. What is missing is not ambition but specificity: a clear answer to the question of who makes Somalia's AI governance rules, for how long, through what process, and subject to what accountability mechanism. This is the central governance deficit that this study's application of the augmented hybrid governance framework, and specifically the concept of Type 3 Structural Accountability-Vacuum Hybridity, brings into sharp analytical relief.

Several concrete implications follow. For Somali policymakers, the immediate priority should be the formalization of SNAIC's mandate with explicit regulatory authority, supplemented by a focused pilot governance arrangement, proposed in Section 5.4, that generates domestic institutional learning before national frameworks are finalized. An additional near-term priority, identified in Section 4.2, is the explicit inclusion of security-sector AI governance in Somalia's emerging framework, before deployment pressure from security sector actors makes retrospective regulation politically more difficult. For international development partners, the comparative evidence counsels a sequencing discipline: support for foundational institutional capacity should precede large-scale AI deployment programs. For scholars, the study proposes a three-type developmental typology of hybrid AI governance configurations that extends the hybrid governance framework to fragile-state contexts and provides a basis for future comparative work.

This study is not without limitations. The analysis relies exclusively on publicly available secondary sources and cannot capture the informal negotiations, bureaucratic politics, or donor-recipient dynamics that often shape governance outcomes in practice. The rapid pace of policy development means some findings may be quickly overtaken by events. The exclusion of Somaliland and Puntland from the primary analysis represents a bounded scope choice rather than a claim that sub-national governance variation is unimportant; future research should address these contexts directly. Finally, while Estonia and Rwanda were selected for principled theoretical reasons, a wider comparative universe, including Somaliland's distinct digital governance initiatives, Sierra Leone's data governance reforms, or South Sudan's analogous fragile-state position, could test the generalizability of the three-type typology proposed here.

Ultimately, this study argues that the conditions for AI-enabled strategic leadership in fragile states are institutional before they are technological, and political before they are technical. For Somalia, the opportunity presented by AI is real, but it is not self-executing. It will be realized only to the extent that the country's leadership treats institutional capacity-building, mandate clarity, accountability design, and the cultivation of citizen trust, as the

necessary precondition for, rather than an afterthought to, the ambitions embedded in its emerging AI governance agenda.

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Conflict of Interest
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Ethics and Consent
Not applicable. This study relies exclusively on publicly available secondary sources and did not involve human participants, so no primary ethics approval was required.

Data and Source Availability
All primary governance documents, academic sources, and grey literature analyzed in this study are publicly available and are cited in the reference list.

Author Contributions

The author is solely responsible for the conception, research design, document analysis, and writing of this article, and approved the final manuscript.

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