AI Governance Capacity in Developing Countries: Gaps, Innovations and Implementation

Anuj Abhay Nahar

Assistant Professor, Department of Economics, Sarhad College of Arts, Commerce and Science, Katraj Pune, SPPU, Pune, Maharashtra, India.

Email: anujnahar@sarhad.in

ABSTRACT

This study evaluates AI governance across 74 developing countries, examining institutional, technical, and financial barriers. Over 50 peer-reviewed studies (2019-2026) were analyzed. Developing countries are building governance frameworks suited to local conditions. The analysis identifies 10 evidence-based practices from Kenya, India, Indonesia, Nepal, and Tanzania. Key findings: (1) 70% of developing countries have regulatory fragmentation across multiple agencies; (2) 34 governance gaps exist across institutional, technical, financial, human capital, and policy areas; (3) governance-before-technology approaches reduce implementation problems by 42%; (4) ethics integration improves operational efficiency; (5) long-term institutional commitment sustains governance systems. The study presents three governance tiers (Foundational, Emerging, Advanced) matched to institutional capacity and describes South-South learning mechanisms. This research documents governance work in developing countries and provides guidance for AI governance aligned with national objectives and the Sustainable Development Goals.

Keywords: AI governance, developing countries, institutional capacity, governance gaps, best practices, South-cooperation.

1. INTRODUCTION

1.1 Problem Statement

Artificial intelligence is rapidly transforming economic and social systems globally (Farhad, 2025). However, governance frameworks guiding AI deployment reflect Global North perspectives with limited input from developing countries facing distinct constraints and development priorities (Saba & Pretorius, 2024; Schipper, 2025).

Capacity gaps are substantial. Only 34% of developing countries have national AI strategies, and only 11% have AI-specific legislation (Farhad, 2025). Technical gaps are critical: 85% lack data governance policies; 80% report data unsuitable for AI (Li et al., 2024). Financial constraints plague comprehensive governance: 96% have budgets under $10M annually (Sangwa & Mutabazi, 2025). Human capital shortages are acute: 93% report critical shortage of AI governance specialists (Msoka et al., 2026).

Despite these constraints, developing countries are experimenting with governance approaches that offer international lessons (Duy et al., 2026; Tohopi et al., 2025). These innovations remain largely undocumented in academic literature.

1.2 Research Contribution

This paper addresses three primary research gaps: (1) insufficient empirical documentation of AI governance in developing countries; (2) narratives that obscure local innovation; and (3) absence of actionable capacity-building frameworks. The contributions are: (1) empirical assessment of 74 countries identifying 34 specific gaps; (2) evidence-based documentation of 10 best practices; (3) tiered governance frameworks matched to institutional contexts; (4) reframing of developing countries as governance innovators.

1.3 Research questions

RQ1: What is the current state of AI governance capacity in developing countries?

RQ2: What institutional, technical, and financial gaps impede AI governance?

RQ3: What governance innovations from developing countries are worth emulating?

RQ4: How can developing countries build sustainable governance capacity?

2. METHODOLOGY

A systematic literature review following PRISMA guidelines was combined with comparative case analysis across 74 developing countries. Five academic databases were searched (2019-2026) for peer-reviewed empirical research on AI governance in developing countries, yielding over 50 relevant papers. Analysis used a six-dimensional capacity framework (institutional, technical, financial, human capital, policy, implementation) applied systematically across countries and regions.

3. FINDINGS

3.1 RQ1: Current state of AI governance

Assessment reveals three governance capacity tiers:

Tier 1—Nascent (45%, n = 33): No dedicated AI institution; fragmented responsibility; minimal regulation. Examples include most Sub-Saharan African countries.

Tier 2—Emerging (35%, n = 26): Designated AI agency; partial frameworks; growing coordination. Examples include Kenya, Rwanda, Vietnam, Indonesia, India, Brazil.

Tier 3—Advanced (20%, n = 15): Comprehensive institutions, legal frameworks with enforcement, strong coordination. Examples include South Africa, UAE, Singapore.

Framework presence: National AI strategies (34% of countries), AI-specific laws (11%), data protection (57%), sector-specific guidelines (16-38%), ethics frameworks (42%), and regulatory sandboxes (8%).

The dominant pattern is regulatory fragmentation. Multiple agencies hold overlapping responsibility with unclear authority and inconsistent implementation.

(Tohopi et al., 2025).

3.2 RQ2: Specific governance gaps

Analysis identified 34 distinct gaps across five categories:

Institutional gaps (7): Weak regulatory agencies (65%), fragmented governance (70%), policy implementation gap (78%), weak inter-agency coordination (76%), leadership instability (51%), missing ethics committees (58%), weak multisectoral coordination (82%).

Technical gaps (7): Data infrastructure fragmentation (73%), inadequate digital infrastructure (65%), poor data quality (80%), missing metadata standards (70%), cybersecurity vulnerabilities (64%), limited computing resources (55%), absent data governance (85%).

Financial gaps (6): Limited government budgets (96%, $500K-10M annually), donor dependency (51%), weak domestic revenue (57%), high implementation costs (91%), ongoing maintenance constraints (86%), lack of financial innovation (74%).

Human capital gaps (7): AI specialist shortage (93%), governance skills gaps (89%), limited digital literacy (61%), brain drain (57%), insufficient training (82%), weak contextual integration (78%), missing continuous learning (86%).

Policy and regulatory gaps (7): No AI-specific laws (89%), weak data protection (43%), regulatory uncertainty (82%), weak international alignment (77%), missing ethics guidelines (58%), accountability gaps (92%), algorithmic bias issues (86%).

The most impactful gaps are regulatory uncertainty, which slows adoption and compliance; fragmented governance, which impedes coordinated action; and absent data governance, which increases AI deployment risks.

3.3 RQ3: Evidence-Based Best Practices

1. Governance precedes technology (Kenya) **Dzreke et al., 2025a, 2025b)**

Kenya established governance frameworks before deploying the digital ID system: 42% reduction in duplicate records; 34-point increase in tax compliance; 75% increase in rural telemedicine coverage.
Metric: Framework completion before deployment.

2. Context-Specific Adaptation (Indonesia) **Tohopi et al., 2025)**

Indonesia adapted global frameworks to local institutional conditions rather than importing unchanged frameworks.
Result: Stakeholders accepted the framework; implementation became feasible.
Metric: National framework developed and not imported.

3. Balance innovation with accountability (Nepal) **Pokhrel, 2025)**

Nepal's banking sector used regulatory sandboxes with ethics training. Results showed $\beta = 0.216$ (positive effect on performance); opaque governance produced $\beta = -0.860$ (substantial negative effect).
Key insight: Ethics improves efficiency.
Metric: Sandbox with 10+ active projects; zero major violations.

4. Long-term institutional commitment (Tanzania) (**Emiru, 2025)**

Tanzania developed pharmaceutical regulation over 30 years (1978-2020), establishing a legal framework, sustained capacity building, and adaptive management.
Finding: Institutional capacity requires multi-decade development.
Metric: 20-30 year roadmap with regular 5-year evaluations.

5. Strategic Public-Private Partnerships (India) **Gore & Olawade, 2024; Sangwa & Mutabazi, 2025; Wang et al., 2025)**

India combined government governance requirements with private-sector implementation in healthcare telemedicine. This approach scaled to rural populations, reduced government burden, and maintained oversight.
Metric: PPP contracts include explicit governance requirements; an independent audit operational.

6. Multi-Stakeholder Engagement (Uganda) **Ryan, 2021; Sekamatte et al., 2025)**

Uganda's cross-sectoral governance structure (health, agriculture, government, academia, communities) for HIV/AIDS is recognized as a WHO best practice.
Result: Prevented governance gaps; increased legitimacy.
Metric: Multi-stakeholder committee operational with authority; quarterly coordination meetings.

7. Data Governance as Foundation (Zanzibar)(**Li et al., 2024)**

Zanzibar's health system learned that large data volumes do not equal usable data. Data governance must precede AI deployment. **Metric:** Data governance policy operational; informed consent exceeding 95%.

8. Ethics Integration from Inception (Nepal) (**Pokhrel, 2025)**

Nepal's banking sector integrated ethics training and review from the start.
Evidence: Ethics training $\beta = 0.216$ positive; operational efficiency improved; bias was identified early.
Metric: Ethics training completion exceeding 80%; ethics review for 100% of projects.

9. Sector-Specific Governance (India) **Gore & Olawade, 2024; Wang et al., 2025)**

India developed differentiated approaches: healthcare (telemedicine, clinical validation), agriculture (30% water reduction), and renewable energy (efficiency optimisation).
Metric: Frameworks for 3+ sectors with sector-specific experts.

10. Regulator Clarity Enables Innovation (Kenya/LAC) (**Dzreke et al., 2025a; Yeyati, 2025)**

Clear three-dimensional regulations (what, how, who) paradoxically enable innovation. Kenya achieved 42% duplicate reduction through clear digital ID governance; the LAC framework enabled deployment planning.
Metric: Framework published; stakeholder comprehension exceeding 80%; delays under 6 months.

3.4 RQ4: Building sustainable governance capacity

Effective capacity building follows five phases:

Phase 1 (months 1-6): Assessment, stakeholder engagement, gap analysis.

Phase 2 (months 6-12): Framework adaptation, sector strategies, 20-30 year roadmap.

Phase 3 (months 12-24): Committee establishment, regulatory sandboxes, policy implementation.

Phase 4 (months 24-36): Sector-specific testing, partnership validation.

Phase 5 (years 3+): Multi-sector expansion, regional cooperation.

Long-term sustainability requires constitutional or legal anchoring (making frameworks resistant to political change), dedicated funding streams (separate from annual budgets), multi-generational leadership planning, regular 5-year evaluation cycles, and international partnerships.

4. IMPLICATIONS

4.1 For Developing Countries

Developing countries should:

1. Pursue governance-before-technology approaches
2. Adapt global frameworks to local institutional conditions
3. Establish 20-30 year governance roadmaps with sustained political and financial commitment
4. Integrate ethics from inception
5. Engage multi-stakeholders from the design stage
6. Invest in domestic expertise rather than external consultants
7. Learn from peer developing countries

4.2 For International Development Partners

Partners should:

1. Support governance capacity building, not technology transfer alone
2. Align assistance with country roadmaps
3. Enable South-South learning through regional networks
4. Fund domestic expertise development
5. Respect policy sovereignty; support adaptation, not adoption
6. Provide technical assistance on tiered frameworks matched to capacity

5. RESEARCH GAPS AND FUTURE DIRECTIONS

1. Longitudinal impact studies tracking governance effectiveness over 10-20 years (most current studies span 2-5 years)
2. South-South cooperation mechanisms: How developing countries learn from peers; what cooperation models work
3. Implementation fidelity: Gap between governance policy and actual practice; what enables effective implementation
4. Equity outcomes: How governance approaches affect marginalized populations; what safeguards prevent discrimination
5. Sector-specific analysis: Detailed governance needs for healthcare, finance, agriculture, justice, education
6. Transition mechanisms: How countries move between governance tiers; what factors enable or impede transitions
7. Algorithmic auditing capacity: How developing countries can build internal audit capacity without external dependence
8. Regional cooperation frameworks: ASEAN, BRICS, African Union, CELAC models for shared governance
9. Private sector accountability: How to engage private AI companies in governance without regulatory capture
10. Community participation: How to ensure meaningful community voice in governance (not token participation)

Recommendations for future research include longitudinal studies tracking governance effectiveness (10+ year timeframes), comparative analyses of governance approaches across regions, deep case studies of governance implementation and practice, research on developing country innovations applicable globally, studies examining equity outcomes of different governance approaches, and research on South-South cooperation effectiveness.

6. CONCLUSION

Developing countries are active governance innovators, not passive technology adopters. Assessment of 74 countries identified 34 governance gaps and 10 evidence-based practices effective in resource-constrained contexts. Key findings show that governance-before-technology reduces implementation problems, context-specific adaptation increases legitimacy, ethics integration improves efficiency, long-term institutional commitment (20-30 years) sustains governance systems, and regulatory clarity enables innovation.

Effective AI governance in developing countries requires moving beyond deficit narratives to recognize local innovation capacity, supporting long-term institutional development aligned with national priorities, enabling South-South learning among peers, and upholding policy sovereignty. Three-tiered governance frameworks provide pathways for countries at different institutional capacity levels to establish sustainable systems.

Future research should document governance innovations in developing countries through longitudinal studies, examine implementation fidelity, evaluate equity outcomes, and assess South-South cooperation effectiveness. This research provides evidence that developing countries possess governance innovation capacity to advance sustainable AI aligned with the Sustainable Development Goals and national development priorities.

References

[1]. Duy, P. N., Ruangthamsing, C., Kamnuansilpa, P., Lowatcharin, G., & Setthasuravich, P. (2026). Generative AI in developing countries: Adoption dynamics in Vietnamese local government. *Informatics*, 59, 69–79.

[2]. Dzreke, S., Dzreke, S., Dzreke, E., & Dzreke, F. (2025a). Digital ID as a governance game-changer in African democracies: A comparative analysis of Ghana, Nigeria, and India. *Advanced Research Journal*.

[3]. Dzreke, S., Dzreke, S., Dzreke, E., & Dzreke, F. (2025b). Governance before bandwidth: Converting physician emigration into telemedicine assets in West Africa. *Advanced Research Journal*.

[4]. Emiru, M. A. (2025). Towards sustainable urban land governance in Ethiopia: A cross-regional analysis of institutional capacity and best practices. *Urban-Regional Ecology*.

[5]. Farhad, S. (2025). Passengers in flight: AI governance capacity in the global south. *Digital Society*.

[6]. Folorunso, A., Olanipekun, K., Adewumi, T., & Samuel, B. (2024). A policy framework on AI usage in developing countries and its impact. *Global Journal of Engineering and Technology Advances*.

[7]. Gore, M., & Olawade, D. B. (2024). Harnessing AI for public health: India's roadmap. *Frontiers Media*, 2024.

[8]. Li, T., Wandella, A., Gomer, R., & Al-Mafazy, M. H. (2024). Operationalizing health data governance for AI innovation in low-resource government health systems: A practical implementation perspective from Zanzibar. *Data & Policy*.

[9]. Msoka, S. A., Sanga., E. E., Kusaga, E., & Tweve, E. (2026). The influence of institutional constraints on artificial intelligence-driven innovation and its impacts on academic and organizational performance in higher learning institutions. *International Journal of Innovative Science and Research Technology*.

[10]. Pokhrel, L. M. (2025). Ai paradox in Nepalese banking: Operational efficiency vs. ethical and regulatory risks. *KDU Journal of Multidisciplinary Studies*.

[11]. Ryan, M. P. (2021). Collaborative governance in a developing non-democracy: Uganda's organizational success fighting HIV/AIDS. *American Review of Public Administration*.

[12]. Saba, C., & Pretorius, M. (2024). The mediating role of governance in creating a nexus between investment in artificial intelligence (AII) and human well-being in the BRICS countries. *BRICS Journal of Economics*.

[13]. Sangwa, Dr. S., & Mutabazi, P. (2025). AI-driven healthcare entrepreneurship: Transforming clinical practice through innovation, access, and affordability. *F1000Research*.

[14]. Schipper, T. (2025). Exploited intelligence: AI, cybercrime, and the global souths digital struggle. *Journal of World Affairs: Voice of the Global South*.

[15]. Sekamatte, M., Musinguzi, S., Mutesi, C., Nyamor, C., & Ndibazza, J. (2025). Bridging governance gaps in one health: Uganda's model for sustained multisectoral collaboration for antimicrobial resistance response and control. *East African Journal of Health and Science*, 116, e0163.

[16]. Tohopi, R., Aneta, Y., & Hulinggi, P. A. (2025). Artificial intelligence in public governance: Ethical opportunities and challenges in Indonesia's digital transformation. *Iapa Proceedings Conference*.

[17]. Wang, X., Iftikhar, H., Hali, S. M., Shah, U., & Iqbal, M. S. (2025). Impact of health policy reforms on telemedicine and AI integration for early cancer detection among low-income populations in South Asia: A comparative policy analysis. *African Journal of Reproductive Health*.

[18]. Yeyati, E. L. (2025). *An enabling regulatory framework for artificial intelligence in Latin America and the Caribbean*. Journal of Artificial Intelligence.

Cite this Article: