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Ethical Ai-driven Leadership for Strategic Decision-making in Public-sector Education: Adoption Pathways in Low-resource and Complex Organizational Environments — a Case Study of the Democratic Republic of the Congo

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Abstract

Artificial Intelligence (AI) and Machine Learning (ML) are increasingly recognized as transformative tools for educational governance and strategic decision-making. Yet, their adoption in low-resource and complex organizational environments remains underexplored. This paper investigates ethical AI-driven leadership in the public-sector education system of the Democratic Republic of the Congo (DRC), where institutional fragility, resource scarcity, and governance challenges intersect with global demands for digital transformation.

The study draws on a purposive sample of comparative cases from sub-Saharan Africa and selected fragile-state contexts, chosen for their relevance to resource constraints, governance complexity, and ongoing digital education reforms. Selection criteria included institutional diversity, policy frameworks, and evidence of AI/ML experimentation in education.

Findings highlight both opportunities—such as enhanced resource allocation, predictive analytics for student performance, and improved transparency—and risks, including algorithmic bias, data privacy concerns, and inequitable access. Ethical leadership emerges as a critical determinant of successful adoption, requiring accountability, inclusivity, and context-sensitive governance.

The paper proposes a distinctive, actionable framework for ethical AI governance in education, integrating transparency, fairness, and participatory decision-making. This model emphasizes adaptive leadership practices that can be replicated across fragile contexts. The anticipated impact is improved access to educational opportunities and strengthened institutional support, enabling public-sector systems to leverage AI responsibly while safeguarding human dignity and legitimacy.

By foregrounding the DRC case, the study underscores the global relevance of ethical AI leadership in contexts where technological innovation collides with systemic constraints. It calls for a reimagining of leadership in education—one that balances innovation with ethical safeguards and provides actionable pathways for equitable digital transformation.

Keywords: Ethical Ai Leadership; Machine Learning Adoption; Publicsector-Sector Education; Governance in Fragile States; Democratic Republic of the Congo; Digital Transformation; Educational Innovation.