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Artificial Intelligence for public sector Governance: Implications for Monitoring and Evaluation and Policy Reform”

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ABSTRACT: This review synthesizes research on "Application of AI in developing countries like Zanzibar, new roles for M&E professionals, and necessary policy reforms" to address the gap between AI’s potential and practical implementation in low-resource contexts. The review aimed to evaluate AI applications and challenges in Zanzibar’s context, benchmark AI-enhanced M&E methodologies, identify evolving M&E roles, analyze necessary policy reforms, and compare relevant case studies. A systematic analysis of multidisciplinary literature encompassing empirical studies, case reports, and policy analyses was conducted, focusing on African and island developing states. Findings reveal that AI significantly advances socio-economic development and public service delivery but is constrained by infrastructural deficits and digital literacy gaps. M&E professionals require new competencies in data science, ethical governance, and participatory approaches to manage AI integration effectively. Comprehensive, adaptable policy frameworks emphasizing capacity building, ethical safeguards, and inclusive governance are critical yet under-implemented in Zanzibar and similar settings. Ethical and capacity challenges, including data privacy and algorithmic bias, persist without robust operational frameworks. Collectively, these findings underscore the \

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transformative potential of AI contingent on context-specific capacity building and policy reforms. The review highlights the necessity for inclusive, evidence-based governance models to ensure equitable AI adoption and sustainable development outcomes in developing countries.

Keywords: *Artificial Intelligence, Monitoring and Evaluation, Data-Driven Decision Making, Socio-Technical Systems, Policy Reform*

Introduction

Research on the application of artificial intelligence (AI) in developing countries like Zanzibar has emerged as a critical area of inquiry due to its potential to drive socio-economic development and address systemic challenges in sectors such as healthcare, agriculture, and education(Aderibigbe et al., 2023)(Khan et al., 2024). Over the past decade, AI technologies have evolved from experimental tools to integral components of digital transformation strategies, with increasing attention to their role in sustainable development and public service delivery(Ahmed, 2025)(Anshari et al., 2024). The significance of this field is underscored by the United Nations Sustainable Development Goals (SDGs), which emphasize inclusive growth and equitable access to technology (Baig et al., 2024) (Li, 2025). For instance, AI-driven innovations have demonstrated capacity to improve healthcare diagnostics and optimize resource management, yet adoption remains uneven, particularly in low-resource settings (Mwogosi, 2025) (Boatemaa et al., 2024).

Despite growing interest, a critical problem persists in effectively integrating AI within developing contexts, where infrastructural deficits, skill shortages, and governance challenges limit its transformative potential (Aderibigbe et al., 2023) (Khan et al., 2024). Existing literature reveals a knowledge gap concerning the specific roles that monitoring and evaluation (M&E) professionals must assume to harness AI's capabilities for adaptive management and evidence-based policymaking (Kazanskaia, 2024) (Shapiro & Lam, 2024) (Lainjo, 2023). Moreover, policy frameworks tailored to local socio-economic and ethical realities remain underdeveloped, with debates surrounding data governance, inclusivity, and accountability(Folorunso et al., 2024)(Hakimi et al., 2025)(Akpudo et al., 2025).

While some studies advocate for robust regulatory mechanisms to mitigate risks such as bias and privacy violations, others emphasize capacity building and stakeholder engagement as primary enablers (Shao et al., 2023) (Ndiaye, 2024). Failure to address these gaps risks exacerbating inequalities and undermining sustainable development efforts(Akpudo et al., 2025)(Sundaram & Wesselbaum, 2024).

This review constructs a conceptual framework that interrelates AI adoption, M&E professional roles, and policy reforms within developing countries, drawing on definitions of AI as autonomous decision-support systems and M&E as adaptive, participatory processes (Aderibigbe et al., 2023) (Kazanskaia, 2024)(Jacob, 2024). The framework highlights the necessity of integrating AI-driven data analytics with inclusive governance and capacity enhancement to optimize development outcomes (Ejjami, 2024) (Kazanskaia, 2024). This alignment informs the research purpose by situating AI not merely as a technological innovation but as a catalyst for systemic transformation mediated by policy and professional practice.

The purpose of this systematic review is to synthesize current knowledge on AI applications in developing countries like Zanzibar, elucidate emerging roles for M&E professionals in this context, and identify necessary policy reforms to support ethical, effective AI integration. By addressing the identified gaps, this review contributes to advancing scholarly understanding and practical guidance for stakeholders aiming to leverage AI for inclusive and sustainable development (Jha & Singh, 2024) (Lainjo, 2024). It offers a comprehensive analysis that bridges technological potential with governance and capacity considerations, thereby informing future research and policymaking.

The review employs a rigorous methodology encompassing a systematic literature assessment of peer-reviewed articles, policy documents, and case studies focused on AI deployment, M&E evolution, and policy frameworks in developing contexts. Inclusion criteria prioritize recent empirical and theoretical works addressing AI's socio-economic impacts, ethical challenges, and governance in low-resource settings. Analytical frameworks integrate thematic synthesis and comparative policy analysis, organizing findings around AI adoption, M&E professional transformation, and policy imperatives(Bouyousfi & Ouedraogo, 2024)(Diallo et al., 2024). The

subsequent sections present a detailed exploration of these themes, culminating in strategic recommendations for research, practice, and policy.

The objective of this report is to examine the existing research on "Application of AI in developing countries like Zanzibar, new roles for M&E professionals, and necessary policy reforms" in order to provide a comprehensive understanding of how artificial intelligence technologies are being integrated within low-resource contexts and their implications for monitoring and evaluation practices. This review is important as it addresses the critical need to bridge the gap between AI's potential and its practical implementation in developing regions, highlighting the evolving responsibilities of M&E professionals amid technological advancements. Furthermore, it aims to identify policy frameworks that can support ethical, inclusive, and effective AI adoption, thereby informing stakeholders and guiding future research and practice towards sustainable development outcomes.

Empirical Literature Review:

2.1 AI as a Tool for Improving Data Availability and Timeliness

Empirical studies consistently show that AI adoption in developing country contexts is primarily motivated by persistent challenges related to data scarcity, fragmentation, and timeliness. In sectors such as healthcare and agriculture, machine-learning–based systems have been empirically shown to improve real-time data generation and predictive capacity, enabling faster and more informed decision-making (Topol, 2019; Kamilaris & Prenafeta-Boldú, 2018). For example, health surveillance systems using AI-supported analytics have enhanced early detection of disease outbreaks in East Africa, supporting more responsive policy interventions (WHO, 2021). However, empirical evaluations also highlight that these gains are highly dependent on data quality and infrastructure reliability, which remain uneven across low-resource settings (Scott et al., 2018).

2.2 Uneven Development Outcomes and Digital Exclusion

A dominant theme in the empirical literature is the uneven distribution of AI-enabled benefits. While AI applications have demonstrated measurable efficiency gains, studies repeatedly find that adoption and impact are skewed toward better-resourced

institutions and populations (Fabregas et al., 2019). In agriculture, empirical evidence shows that AI-powered advisory tools disproportionately benefit farmers with higher literacy levels, stable connectivity, and access to complementary inputs, thereby reinforcing existing inequalities (Baumüller, 2018). This pattern is echoed in governance and social protection systems, where algorithmic targeting may exclude marginalized groups when data systems reflect pre-existing social biases (Eubanks, 2018; Benjamin, 2019).

2.3 Institutional Capacity as a Determinant of AI Effectiveness

Across empirical studies, institutional capacity emerges as a critical determinant of whether AI adoption leads to meaningful development outcomes. Evidence from public sector reforms in Africa indicates that AI-enabled systems are more effective when embedded within coherent institutional frameworks that support coordination, accountability, and learning (World Bank, 2020). Conversely, weak institutional arrangements often result in fragmented implementation, short-lived pilot projects, and limited integration with policy processes (Gelb & Mukherjee, 2020). Empirical findings thus challenge techno-centric narratives by demonstrating that AI effectiveness is contingent on governance quality rather than technological sophistication alone.

2.4 Transformation of Monitoring and Evaluation Practice

Although still limited, empirical research increasingly documents how AI is reshaping monitoring and evaluation (M&E) practice in developing contexts. Studies show that AI tools are being used to automate data collection, analyze large administrative datasets, and support near–real-time monitoring of development interventions (Bamberger, 2018; Goldman et al., 2020). These changes have empirically altered evaluator roles, shifting emphasis from routine reporting toward data interpretation, adaptive learning, and strategic decision support (Patton, 2019). However, empirical assessments also highlight significant capacity gaps among M&E professionals, particularly in data science and algorithmic literacy, constraining effective use of AI-generated insights (UNICEF, 2020).

2.5 Ethical Risks and Governance Challenges

Ethical risks constitute a recurring empirical theme, particularly in relation to algorithmic bias, transparency, and accountability. Case-based evaluations demonstrate that AI systems deployed in social services and governance can unintentionally reproduce discrimination when trained on biased or incomplete datasets (Eubanks, 2018). Empirical studies further show that the absence of clear regulatory frameworks and participatory oversight mechanisms increases the likelihood of misuse and public distrust (Benjamin, 2019). These findings underscore the importance of embedding ethical safeguards and stakeholder engagement within AI governance structures.

2.6 Evidence Gaps in Small Island and Low-Income Contexts

A notable gap in the empirical literature concerns small island and low-income contexts such as Zanzibar. Existing evaluations and policy reports suggest that while digitalization initiatives and results-based management systems are expanding, AI adoption remains nascent and uneven (Government of Zanzibar, 2021; Zanzibar Planning Commission, 2022). Empirical evidence points to reliance on donor-supported pilots, limited cross-sectoral coordination, and weak integration between AI initiatives and national M&E systems. This gap limits context-specific learning and reinforces the need for locally grounded empirical research.

Taken together, the empirical literature reveals that AI functions less as a standalone solution and more as an enabling instrument whose development impact is mediated by institutional capacity, governance arrangements, and professional competencies. While AI has demonstrably improved data availability and analytical capacity in selected sectors, empirical evidence cautions that without inclusive design, ethical oversight, and strong M&E systems, AI risks reinforcing existing inequalities rather than advancing sustainable development. These thematic insights provide a critical empirical foundation for examining AI-enabled M&E reform and policy design in Zanzibar and comparable developing country contexts.

3. Theoretical Literature Review

3.1 AI and Development: From Technological Determinism to Contextual Embeddedness

Early theoretical accounts of artificial intelligence in development were strongly influenced by technological determinism, assuming that digital innovation would automatically enhance efficiency, transparency, and growth. Within this perspective, AI is framed as a neutral tool capable of overcoming institutional weaknesses through automation and data-driven decision-making. However, contemporary development theory increasingly challenges this view, emphasizing that technological outcomes are socially and institutionally mediated (Heeks, 2010; Toyama, 2015). From this perspective, AI does not act independently of context but is shaped by existing power relations, capacities, and governance structures.

The concept of contextual embeddedness is particularly relevant in developing country and small island settings, where infrastructural constraints, institutional fragmentation, and social inequalities condition how AI systems are designed and used. This theoretical shift provides a foundation for analyzing AI adoption in Zanzibar, where policy ambition interacts with structural limitations.

3.2 Institutional Theory and AI Governance

Institutional theory offers a useful lens for understanding the uneven outcomes of AI adoption in public sector contexts. From this perspective, organizations operate within formal and informal rules, norms, and routines that shape technology uptake and use (North, 1990). AI systems introduced without alignment to existing institutional arrangements often result in symbolic compliance rather than substantive change.

In developing contexts, institutional isomorphism—where organizations adopt globally promoted technologies to signal modernity or legitimacy—can lead to superficial AI implementation with limited developmental impact (DiMaggio & Powell, 1983). This insight is particularly relevant for Zanzibar, where AI initiatives may be driven by international agendas rather than locally grounded needs. Institutional theory thus helps explain why AI adoption often outpaces institutional capacity and why policy reform is essential for sustainable integration.

3.3 Science, Technology, and Society (STS) Perspectives

Science, Technology, and Society (STS) theory emphasizes the co-production of technology and society, arguing that technologies embody social values, political choices, and power relations (Jasanoff, 2004). Applied to AI, STS perspectives highlight that algorithms are not neutral but reflect the assumptions, data, and interests embedded in their design.

In development and governance contexts, STS theory draws attention to whose knowledge is prioritized, whose data are used, and who benefits from AI-driven decisions. This perspective is particularly important for M&E practice, as AI-generated evidence may marginalize local knowledge or participatory evaluation approaches if not carefully designed. STS theory therefore provides a critical framework for assessing ethical risks, bias, and accountability in AI-enabled M&E systems.

3.4 Adaptive Governance and Complexity Theory

AI-enabled systems introduce new forms of complexity into development planning and evaluation. Complexity and adaptive governance theories emphasize that development systems are dynamic, non-linear, and characterized by uncertainty (Ramalingam et al., 2008). From this perspective, traditional linear planning and evaluation models are ill-suited to AI-driven environments.

Adaptive governance theory suggests that AI can support iterative learning, real-time feedback, and flexible policy responses if institutions are designed to absorb and act on continuous information flows (Ansell & Gash, 2008). However, without adaptive capacity, AI may overwhelm decision-makers with data rather than improve outcomes. This theoretical lens aligns closely with contemporary debates on adaptive management and learning-oriented M&E.

3.5 Evaluation Theory and the Changing Role of M&E

Evaluation theory provides a direct conceptual bridge between AI and development practice. Utilization-focused evaluation emphasizes that evidence should be designed for decision-making rather than compliance (Patton, 2008). AI has the potential to

strengthen utilization by providing timely, relevant insights, but only if evaluators retain interpretive and facilitative roles.

Theory-based evaluation further underscores the importance of understanding causal mechanisms rather than relying solely on correlations generated by AI models (Weiss, 1997). Without theory, AI-driven analytics risk producing technically sophisticated but policy-irrelevant findings. These theoretical insights reinforce the need to integrate AI tools within robust evaluative frameworks rather than treating them as substitutes for evaluative reasoning.

3.6 Digital Inequality and Power

Theories of digital inequality and political economy highlight how digital technologies can reproduce or exacerbate existing power asymmetries (van Dijk, 2005). In AI-enabled systems, access to data, computational capacity, and technical expertise is unevenly distributed, often privileging external actors and central institutions over local communities.

In small island and developing contexts, these asymmetries raise critical questions about data sovereignty, accountability, and local ownership of AI systems. Integrating political economy perspectives into AI and M&E analysis is therefore essential for assessing not only effectiveness but also equity and legitimacy.

Theoretical Synthesis

Taken together, these theoretical perspectives converge on a central insight: AI is not a standalone solution but a socio-technical system whose impacts depend on institutional capacity, governance arrangements, and evaluative practice. Institutional theory explains adoption patterns, STS theory reveals embedded values and power relations, adaptive governance highlights learning dynamics, and evaluation theory underscores the enduring importance of human judgment. This integrated theoretical framework provides a robust foundation for analyzing AI-enabled M&E and policy reform in Zanzibar and comparable developing country contexts.

Summary of key reviewed literatures

Theme	Key Findings	Representative References
AI Applications in Developing Countries	AI is widely applied in healthcare, agriculture, education, and public service delivery, improving data collection, predictive analytics, and service efficiency. However, adoption is uneven due to infrastructure and skills gaps.	Aker et al., 2016; Kamilaris & Prenafeta-Boldú, 2018; Topol, 2019; Baumüller, 2018; World Bank, 2019
Monitoring & Evaluation (M&E) Transformation	AI reshapes M&E roles toward data interpretation, real-time monitoring, predictive insights, and adaptive learning. Evaluators need skills in data science and ethical oversight.	Bamberger, 2018; Patton, 2019; Goldman et al., 2020; UNICEF, 2020
Policy and Governance	Effective AI adoption requires institutional capacity, context-sensitive governance, and ethical safeguards. Regional coordination and national frameworks are often fragmented.	Gelb & Mukherjee, 2020; Eubanks, 2018; Benjamin, 2019; World Bank, 2020; Government of Zanzibar, 2021
Ethical Risks & Digital Inequality	AI can reproduce social bias and exacerbate inequalities if deployed without transparency and participatory oversight. Digital divides and data ownership are critical concerns.	Eubanks, 2018; Benjamin, 2019; van Dijk, 2005; Fabregas et al., 2019

Theoretical Insights	Technological outcomes are socially and institutionally mediated. Institutional theory explains adoption patterns; STS highlights embedded values; adaptive governance emphasizes learning; evaluation theory stresses evidence relevance.	Heeks, 2010; Toyama, 2015; DiMaggio & Powell, 1983; Jasanoff, 2004; Ansell & Gash, 2008; Patton, 2008; Weiss, 1997
Zanzibar Context	Limited empirical studies; AI adoption is nascent and pilot-driven. Integration with national M&E and policy systems is weak, highlighting the need for capacity building and context-sensitive policy reforms.	Zanzibar Planning Commission, 2022; Government of Zanzibar, 2021; Faki et al., 2024

Methodology

This study employed a structured literature review to examine the applications of artificial intelligence (AI), the transformation of monitoring and evaluation (M&E) practices, and the policy environment in developing country contexts, with particular attention to Zanzibar. The review was designed to integrate empirical findings, policy analyses, and theoretical insights, enabling a holistic understanding of AI adoption and its implications for governance and evaluation systems.

The research focused on a comprehensive set of data sources, including peer-reviewed journal articles, policy documents, and grey literature published between 2013 and 2025. The search was conducted across several multidisciplinary academic databases, including Scopus, Web of Science, PubMed, ScienceDirect, Google Scholar, and JSTOR, which cover development studies, public policy, information and communication technologies, and evaluation research. Search terms combined relevant keywords such as “Artificial Intelligence,” “Monitoring and Evaluation,” “Policy Reform,” “Developing Countries,” “Small Island Developing States,” and “Zanzibar.”

To ensure relevance and rigor, studies were selected based on specific inclusion criteria: they had to address AI adoption in developing country contexts, explore its implications for governance or M&E practice, or discuss policy frameworks supporting AI integration. Studies that focused exclusively on technical aspects of AI without relevance to development or governance were excluded. This approach allowed the review to concentrate on practical and policy-oriented applications of AI while maintaining analytical depth.

Data from the selected studies were analyzed using a thematic synthesis approach, identifying recurring patterns across empirical and policy literature. Four main analytical domains guided the synthesis: sectoral applications of AI, emerging roles of M&E professionals, governance and policy challenges, and ethical and equity considerations. Comparative analysis was used to highlight differences between Zanzibar and other developing country contexts, particularly in terms of institutional capacity, policy integration, and infrastructural readiness.

The study acknowledges several limitations. The analysis relied primarily on secondary sources, and empirical studies specific to Zanzibar remain limited. Moreover, the rapidly evolving nature of AI technologies means that findings may quickly become outdated, highlighting the need for ongoing research and monitoring.

Findings and Discussion

Artificial intelligence (AI) has increasingly been applied in developing countries to improve service delivery, data collection, and decision-making, particularly in sectors such as healthcare, agriculture, and public administration (Aker et al., 2016; Topol, 2019; Kamilaris & Prenafeta-Boldú, 2018). Empirical evidence indicates that AI systems enhance the availability of real-time data, enable predictive analytics, and support the efficient allocation of resources. In Zanzibar, AI adoption remains at an early stage, with most initiatives being pilot-based and focused on improving digital data systems rather than fully integrated analytics platforms (Zanzibar Planning Commission, 2022; Government of Zanzibar, 2021). The uneven adoption and limited integration observed in Zanzibar reflect broader institutional constraints, where organizational structures, rules, and routines often lag behind technological

ambitions, as suggested by Institutional Theory (North, 1990; DiMaggio & Powell, 1983).

The application of AI is also transforming the roles of monitoring and evaluation (M&E) professionals. Traditionally focused on routine reporting and compliance, evaluators now increasingly engage in interpreting complex datasets, validating algorithmic outputs, and facilitating adaptive learning (Bamberger, 2018; Patton, 2019; UNICEF, 2020). Empirical studies indicate that AI has the potential to strengthen evidence-based decision-making by enabling real-time monitoring and predictive insights (Goldman et al., 2020). Nevertheless, this potential can only be realized if evaluators possess adequate skills in data science, ethical oversight, and participatory engagement. Science, Technology, and Society (STS) theory emphasizes that AI outputs are socially constructed and embedded with assumptions; thus, evaluators must critically assess algorithmic results to avoid reinforcing bias or marginalizing local knowledge (Jasanoff, 2004). Adaptive governance theory further underscores the importance of organizational capacity to act upon AI-generated insights; without flexible, learning-oriented systems, the data produced may not translate into improved policy or program outcomes (Ansell & Gash, 2008; Ramalingam et al., 2008).

Policy and governance present additional challenges. Empirical evidence from Zanzibar and other developing contexts demonstrates that regulatory frameworks for AI are often fragmented, and implementation is inconsistent across sectors (Gelb & Mukherjee, 2020; World Bank, 2020). Weak coordination between ministries, limited cross-sectoral integration, and reliance on externally funded pilots constrain the developmental impact of AI initiatives (Government of Zanzibar, 2021). Institutional Theory explains these patterns by highlighting the critical role of formal and informal organizational structures in shaping technology adoption and use (DiMaggio & Powell, 1983). STS theory further illuminates the social and ethical dimensions of AI governance, suggesting that without inclusive policy design, AI systems may reflect and reinforce existing power imbalances (Jasanoff, 2004). Adaptive governance perspectives reinforce the need for iterative learning and

responsive policymaking to ensure that AI adoption achieves meaningful developmental outcomes (Ansell & Gash, 2008).

Ethical considerations and equity concerns are central to the effective deployment of AI. Empirical studies across Africa indicate that AI systems, if deployed without transparency and participatory design, risk reproducing social bias and excluding marginalized groups (Eubanks, 2018; Benjamin, 2019; Fabregas et al., 2019). In Zanzibar, limited evidence suggests that AI initiatives are more accessible to urban and well-connected populations, highlighting the potential for digital inequality (Zanzibar Planning Commission, 2022). STS theory emphasizes that technology embodies social and political choices, and Adaptive Governance theory stresses the importance of feedback mechanisms to identify and correct exclusionary practices (Jasanoff, 2004; Ansell & Gash, 2008). Institutional arrangements, including regulatory oversight and accountability structures, are therefore essential to ensure that AI supports inclusive development rather than exacerbating inequities (North, 1990; DiMaggio & Powell, 1983).

In summary, the integration of empirical evidence and theoretical insights demonstrates that AI is not a standalone solution but a socio-technical system whose effectiveness depends on the interplay of technology, institutions, governance, and professional capacity. AI has the potential to enhance monitoring, evaluation, and service delivery in Zanzibar and similar contexts, but this potential is conditional upon the presence of supportive institutional arrangements, ethical and inclusive practices, and adaptive governance mechanisms (Heeks, 2010; Toyama, 2015; Patton, 2008). These findings underscore the need for targeted investments in capacity building, policy alignment, and participatory M&E frameworks to ensure that AI contributes to equitable and sustainable development outcomes.

Conclusion

The collective body of literature reveals that artificial intelligence (AI) holds significant transformative potential for developing countries such as Zanzibar, particularly across critical sectors including healthcare, agriculture, education, and public service delivery. AI integration enhances socio-economic development by

improving service efficiency, enabling real-time data analytics, and supporting evidence-based policymaking. Its role in advancing Sustainable Development Goals (SDGs), climate resilience, and governance transparency is increasingly recognized, with AI-driven tools facilitating adaptive management and accountability mechanisms. However, this potential is strongly moderated by systemic infrastructural deficits, limited digital literacy, and capacity constraints that persist in low-resource settings, creating significant barriers to effective AI adoption and scalability.

Monitoring and Evaluation (M&E) practices are undergoing fundamental changes due to AI integration. The literature consistently highlights the emergence of new competencies required for M&E professionals, including data science expertise, AI literacy, and ethical governance skills. Participatory and stakeholder-engaged approaches are emphasized as vital to maintain inclusivity and contextual relevance within AI-augmented M&E systems. Yet, operationalizing these evolving roles remains underdeveloped, with limited tailored capacity-building initiatives and insufficient strategies to address ethical challenges such as algorithmic bias and evaluator preparedness, which may affect the quality and equity of evaluations.

Policy frameworks are identified as critical enablers for responsible AI deployment, calling for comprehensive, adaptable, and context-sensitive regulations that balance innovation with ethical safeguards. Regional coordination, particularly through bodies like the African Union, is seen as pivotal in harmonizing governance efforts and addressing fragmentation. Nonetheless, there is a noticeable gap in empirical evidence regarding policy implementation effectiveness in Zanzibar and similar contexts. Governance challenges are compounded by rapid technological evolution, infrastructural disparities, and socio-political complexities that influence policy uptake and sustainability.

Ethical and social considerations permeate the literature, underscoring risks related to data privacy, inclusivity, and potential exacerbation of inequalities. While conceptual frameworks for ethical AI governance exist, practical enforcement and culturally grounded approaches remain insufficiently explored. Digital colonialism and dependency on foreign AI technologies emerge as critical concerns, highlighting the

need for fostering local innovation ecosystems to ensure sovereignty and equitable access.

In sum, while AI offers promising avenues to enhance socio-economic development and revolutionize M&E practices in developing countries like Zanzibar, realizing these benefits necessitates addressing entrenched infrastructural and capacity challenges, fostering inclusive governance, and implementing robust, adaptable policy frameworks. Future efforts must prioritize empirical research on AI integration outcomes, culturally sensitive ethical frameworks, and scalable capacity-building models to ensure that AI contributes effectively and equitably to sustainable development goals in low-resource environments.

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Theoretical and Practical Implications

Theoretical Implications

The synthesis of findings underscores the evolving conceptualization of AI as not merely a technological tool but as a transformative agent reshaping socio-economic development paradigms in developing countries. This challenges traditional development theories by integrating AI-driven innovation as a core component of

growth and governance models(Aderibigbe et al., 2023) (Moustapha et al., 2025) (Sundaram & Wesselbaum, 2024). The reviewed literature advances the theoretical understanding of Monitoring and Evaluation (M&E) by positioning AI and big data as catalysts for transitioning from static, compliance-based evaluation frameworks to dynamic, real-time, and predictive systems. This evolution supports theories advocating for adaptive and participatory evaluation methodologies in low-resource settings(Kazanskaia, 2024) (Kazanskaia, 2024) (Lainjo, 2023).

Ethical governance emerges as a critical theoretical dimension, emphasizing the necessity to embed principles of fairness, transparency, and inclusivity within AI frameworks. This aligns with and extends existing ethical AI theories by contextualizing them within the socio-political realities of developing countries, particularly in Africa(Akpudo et al., 2025) (Plantinga et al., 2023) (Hakimi et al., 2025).

The literature collectively supports the notion that AI adoption in developing contexts must be understood through a multi-level governance lens, incorporating local innovation ecosystems, capacity building, and international cooperation. This challenges monolithic models of technology transfer and calls for more nuanced, context-sensitive theoretical frameworks(Folorunso et al., 2024) (Diallo et al., 2024) (Ndiaye, 2024). The integration of AI into public service delivery and policy-making processes introduces new theoretical considerations regarding digital democracy, accountability, and citizen engagement. These findings contribute to governance theories by highlighting AI's potential to enhance transparency and participatory governance while also raising concerns about digital divides and trust(Onduko et al., 2025) (Kamara, 2025) (Fuad et al., 2025).

Practical Implications

For practitioners and policymakers in developing countries like Zanzibar, the findings highlight the urgent need to invest in digital infrastructure, AI literacy, and capacity building to bridge the gap between AI's potential and its practical implementation. Tailored training programs for M&E professionals are essential to

equip them with competencies in AI and data science(Aderibigbe et al., 2023) (Li et al., 2023) (Bainomugisha & Nakatumba-Nabende, 2024).

The evolving roles of M&E professionals necessitate practical adjustments in organizational structures and workflows to incorporate AI-driven tools for data collection, analysis, and reporting. This calls for strategic workforce planning and continuous professional development to harness AI's benefits effectively(Kazanskaia, 2024) (Jacob, 2024) (Shapiro & Lam, 2024).

Policy reforms must prioritize the establishment of robust ethical and legal frameworks that address data governance, privacy, algorithmic accountability, and inclusivity. Developing countries should adopt flexible, principle-based regulatory approaches that accommodate rapid technological changes while safeguarding human rights(Folorunso et al., 2024) (Hakimi et al., 2025) (Shao et al., 2023).

Public sector agencies should foster multi-stakeholder engagement and participatory approaches in AI deployment to enhance trust, transparency, and responsiveness in service delivery. This includes involving citizens in co-design processes and ensuring equitable access to AI-powered services to avoid exacerbating existing inequalities(Faki et al., 2024) (Kamara, 2025) (Ndiaye, 2024).

International collaboration and regional coordination, exemplified by the African Union's initiatives, are critical for harmonizing AI governance, sharing best practices, and building local expertise. Such cooperation can accelerate AI readiness and ensure that policy frameworks are contextually relevant and sustainable(Diallo et al., 2024) (Njoroge, 2024).

Practical implementation of AI in sectors such as healthcare, agriculture, and climate resilience requires context-sensitive strategies that address infrastructural limitations, data quality issues, and ethical concerns. Decentralized policy development and inclusive design processes are recommended to foster sustainable and equitable AI integration(Mwogosi, 2025) (Khanal & Khanal, 2025) (Bangura et al., 2025).

References

1. Addison, L. (2025). Ethical governance and artificial intelligence for climate resilience in small island developing states. Journal of Information, Communication and Ethics in Societynull, . https://doi.org/10.1108/jices-04-2025-0093

2. Aderibigbe, A. O., Ohenhen, P. E., Nwaobia, N. K., Gidiagba, J. O., & Ani, E. C. (2023). Artificial intelligence in developing countries: Bridging the gap between potential and implementation. https://doi.org/10.51594/csitrj.v4i3.629

3. Ahmed, N. I. (2025). Human-ai collaboration for inclusive growth and sustainable development. https://doi.org/10.70301/sbs.mono.2025.1.9

4. Akpudo, U. E., Effoduh, J. O., Kong, J. D., & Gao, Y. (2025). Unveiling AI concerns for sub-saharan africa and its vulnerable groups. https://doi.org/10.32920/28382105.v1

5. Anshari, M., Hamdan, M., Ahmad, N., & Ali, E. (2024). Public service delivery, artificial intelligence and the sustainable development goals: Trends, evidence and complexities. Journal of science & technology policy managementnull, . https://doi.org/10.1108/jstpm-07-2023-0123

6. Badekale, R. A., & Akinfaderin, A. (2025). Ai-driven climate policy scenario generation for sub-saharan africa. https://doi.org/10.48550/arxiv.2505.18694

7. Baig, M. A. A., Huang, J., & Xu, J. (2024). AI for united nations sustainable development goals. https://doi.org/10.31224/3866

8. Bainomugisha, E., & Nakatumba-Nabende, J. (2024). Developing and deploying end-to-end machine learning systems for social impact: A rubric and practical artificial intelligence case studies from african contexts. Applied AI lettersnull, . https://doi.org/10.1002/ail2.100

9. Bamberger, M., & Leeuw, F. L. (2025). The evolving role of artificial intelligence and big data in development evaluation: Opportunities and challenges. https://doi.org/10.4337/9781803925677.00011

10. Bangura, S., Chikukwa, T., & Lourens, M. (2025). Scoping review: Artificial intelligence applications for climate mitigation and adaptation in developing nations: Opportunities, technical challenges, and associated risks. Advances in networks, 12 (2), 29-33. https://doi.org/10.11648/j.net.20251202.11

11. Boatemaa, R., Asare, S. O., Akabadin, S. C., Agyabeng, V., & Addy, A. (2024). The role of AI in enhancing disease surveillance and outbreak response in developing countries. https://doi.org/10.69600/gjnmid.2024.v01.i04.16-29

12. Bouyousfi, S. E., & Ouedraogo, M. (2024). Artificial intelligence and big data-driven evaluation research and practices: A systematic literature review. Evaluationnull, . https://doi.org/10.1177/13563890241289937

13. Deenapanray, P. N. K., & Bassi, A. M. (2014). The experience of islands in deploying system dynamics modeling as an integrated policy tool. Natural Resources Forum, 38 (1), 67-81. https://doi.org/10.1111/1477-8947.12037

14. Diallo, K., Smith, J. W., Okolo, C. T., Nyamwaya, D., Kgomo, J., & Ngamita, R. (2024). Case studies of AI policy development in africa. Data & policy, 7 null, . https://doi.org/10.1017/dap.2024.71

15. Ejjami, R. (2024). The AI and big data equitable transformation theory (abett): A pathway to inclusive development and technological empowerment. International Journal For Multidisciplinary Researchnull, . https://doi.org/10.36948/ijfmr.2024.v06i05.28263

16. Faki, A. J., & Matoka, C. (2023). Effectiveness of m&e systems in zanzibar's public sector: The role of results utilization. Asian research journal of arts & social sciences, 20 (2), 26-36. https://doi.org/10.9734/arjass/2023/v20i2444

17. Faki, A. J., Matoka, C., & Mutasa, F. (2024). Enhancing the effectiveness of public sector monitoring and evaluation systems in zanzibar through stakeholders' engagement. Pan African Journal of Business Management, 8 (1), 107-124. https://doi.org/10.61538/pajbm.v8i1.1498

18. Folorunso, A., Olanipekun, K., Adewumi, T., & Samuel, B. J. (2024). A policy framework on AI usage in developing countries and its impact. Global Journal of Engineering and Technology Advances, 21 (1), 154-166. https://doi.org/10.30574/gjeta.2024.21.1.0192

19. Fuad, A., Dewi, S. K., & Djuyandi, Y. (2025). Opportunities and challenges of artificial intelligence adoption in democratization and public policy: A case study of the tangerang live application. JWP (Jurnal Wacana Politik), 10 (3), 289-301. https://doi.org/10.24198/jwp.v10i3.63616

20. Gikunda, K. (2023). Empowering africa: An in-depth exploration of the adoption of artificial intelligence across the continent. https://doi.org/10.48550/arxiv.2401.09457

21. Gwagwa, A., Kraemer-Mbula, E., Rizk, N., Rutenberg, I., & Beer, J. D. (2020). Artificial intelligence (ai) deployments in africa: Benefits, challenges and policy dimensions. https://doi.org/10.23962/10539/30361

22. Hakimi, M., Zarinkhail, S., & Sahnosh, F. A. (2025). Artificial intelligence and legal reform in developing countries: Advancing ethical, rights-based, and accountable digital governance. Jurnal Ilmiah Telsinas Elektro Sipil dan Teknik Informasi, 8 (2), 127-144. https://doi.org/10.38043/telsinas.v8i2.6934

23. Jacob, S. (2024). Artificial intelligence and the future of evaluation: From augmented to automated evaluation. Digital governmentnull, . https://doi.org/10.1145/3696009

24. Jha, A., & Singh, S. R. (2024). Bridging the divide. Advances in finance, accounting, and economics book seriesnull, 133-150. https://doi.org/10.4018/979-8-3693-6392-8.ch007

25. Kamara, R. D. (2025). Bridging the gap: Opportunities, challenges and strategies for AI deployment in public service delivery. Publìčne upravlìnnâ ta regìonal′nij rozvitok(28), 334-356. https://doi.org/10.34132/pard2025.28.02

26. Kazanskaia, A. N. (2024). Future directions in monitoring and evaluation: Emerging trends, technologies, and practices. https://doi.org/10.64357/neya-gjnps-me-future-2025

27. Kazanskaia, A. N. (2024). Monitoring and evaluation in international development: Foundations, tools, and emerging practices. https://doi.org/10.64357/neya-gjnps-me-foundations-2025

28. Khan, M. S., Umer, H., & Faruqe, F. (2024). Artificial intelligence for low income countries. Humanities & social sciences communications, 11 (1), . https://doi.org/10.1057/s41599-024-03947-w

29. Khanal, K., & Khanal, K. (2025). Climate neutrality-based sustainable practices and AI for developing countries. Advances in computational intelligence and robotics book seriesnull, 285-310. https://doi.org/10.4018/979-8-3373-0680-3.ch010

30. King, J. A. (2023). Leveraging artificial intelligence for economic development in developing countries. https://doi.org/10.31219/osf.io/fvpn4

31. Lainjo, B. (2023). The the application of artificial intelligence and machine learning to enhance results-based management. Journal of Information Systems and Informaticsnull, . https://doi.org/10.51519/journalisi.v5i4.609

32. Lainjo, B. (2024). The implications of artificial intelligence on international development management. Journal of autonomous intelligencenull, . https://doi.org/10.32629/jai.v7i5.1258

33. Li, T., Wandella, A., Gomer, R., & Al-Mafazy, M. H. (2023). Operationalizing health data governance for AI innovation in low-resource government health systems: A practical implementation perspective from zanzibar. Data & policy, 6 null, . https://doi.org/10.1017/dap.2024.65

34. Li, Y. (2025). Generative artificial intelligence in the global south: Navigating economic transformation, inequality, and governance challenges. Scientific

journal of humanities and social sciences., 7 (9), 11-18. https://doi.org/10.54691/c75x9281

35. Makame, M. A., & Sannasai, A. (2024). Navigating the e-government landscape in zanzibar a comprehensive empirical assessment. Deleted Journal, 5 (1), . https://doi.org/10.61688/ajpbs.v5i1.163

36. Marzouk, A., Hasso, B. A., Tchappi, I. H., Al-Kuwatli, B., & Najjar, A. (2023). Bluedata: AI assisted primary data collection system for conflict zones. https://doi.org/10.1145/3623809.3623946

37. Moustapha, A. A., Akanbi, M. L., Bello, G. O., Yakub, A. I., Akanji, R. D., & Raji, B. (2025). Artificial intelligence in developing nation: Bridging the execution gap with potential. International journal of latest technology in engineering management & applied science, 14 (8), 1497-1510. https://doi.org/10.51583/ijltemas.2025.1408000188

38. Mwogosi, A. (2025). Leveraging AI to enhance healthcare delivery in tanzania: Innovations and ethical imperatives. SAGE Open, 15 (3), . https://doi.org/10.1177/21582440251378162

39. Ndiaye, S. M. (2024). Building trustworthiness as a requirement for AI in africa: Challenges, stakeholders and perspectives. https://doi.org/10.1007/978-3-031-75674-0_3

40. Njoroge, J. W. (2024). Potential role of african union in development of AI governance across the continent. European Journal of Social Sciences Studies, 10 (4), . https://doi.org/10.46827/ejsss.v10i4.1822

41. Onduko, J. O., Kalombo, M. A., Kuol, M. D., Makale, B. G., & Saleh, M. A. (2025). Ai-driven governance: Transforming public and addressing legacy issues in post-colonial africa. London journal of interdisciplinary sciences.(3), 62-74. https://doi.org/10.31039/ljis.2024.3.291

42. Onoja, J. P., & Ajala, O. A. (2023). Ai-driven project optimization: A strategic framework for accelerating sustainable development outcomes. GSC Advanced

Research and Reviews, 15 (1), 158-165. https://doi.org/10.30574/gscarr.2023.15.1.0118

43. Plantinga, P., Shilongo, K., Mudongo, O., Umubyeyi, A., Gastrow, M., & Razzano, G. (2023). Responsible artificial intelligence in africa: Towards policy learning. Data & policy, 6 null, . https://doi.org/10.1017/dap.2024.60

44. Prakash, R. (2025). ai robotics: Transforming grassroots innovation for sustainable development in developing economies. Business strategy and development, 8 (2), . https://doi.org/10.1002/bsd2.70143

45. Shao, D., Marwa, N., & Matendo, D. (2023). Regulatory strategies for fostering responsible AI innovation in african economies. https://doi.org/10.1109/aaiac60008.2023.10465404

46. Shapiro, S., & Lam, V. (2024). Artificial intelligence in program evaluation: Insights and applications. The Canadian Journal of Program Evaluation, 39 (2), 382-391. https://doi.org/10.3138/cjpe-2024-0027

47. Sundaram, A., & Wesselbaum, D. (2024). Economic development reloaded: The AI revolution in developing nations. New Zealand economic papersnull, 1-7. https://doi.org/10.1080/00779954.2024.2439955

48. Tanveer, M., Hassan, S., & Bhaumik, A. (2020). Academic policy regarding sustainability and artificial intelligence (ai). Sustainability, 12 (22), . https://doi.org/10.3390/SU12229435

49. Zerfu, E., Kebede, S. W., & Kebede, S. W. (2013). Filling the learning gap in program implementation using participatory monitoring and evaluation: Lessons from farmer field schools in zanzibar. Social Science Research Networknull, . https://doi.org/10.2139/SSRN.2245673