

Integration of Artificial Intelligence in Taxation: Are Kenya and Tanzania Ready?

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Abstract

Artificial intelligence (AI) is increasingly transforming tax administration through predictive compliance analytics, automated taxpayer services, fraud detection, audit selection, risk profiling, and the integration of previously fragmented datasets. While these innovations offer significant benefits for governments seeking to boost domestic resource mobilization, they also raise critical questions about institutional readiness, data quality, digital infrastructure, taxpayer rights, cybersecurity, algorithmic bias, administrative capacity, and public trust. This paper investigates whether Kenya and Tanzania, two of East Africa's largest and most reform-driven tax authorities, are prepared to adopt AI in tax administration.

Using a comparative qualitative approach, the analysis examines tax reform documents, digital government initiatives, international reports, and emerging AI governance frameworks. The findings indicate that both countries are at an advanced-emerging stage of AI readiness but occupy different strategic positions: Kenya has made the most progress, implementing an AI-based automated return validation system since January 2026, supported by a national AI strategy and proposed AI legislation. Tanzania has established key infrastructure, the Integrated Domestic Revenue Administration System (IDRAS), launched in February 2026 to unify tax processes, but lacks a clear AI enforcement plan.

The paper introduces the AI Tax Administration Readiness Framework (AITARF), which has eight dimensions. It emphasizes that digitalization alone isn't sufficient for AI readiness and recommends a phased approach: Digitize, Integrate, Govern, Analyze, Automate, and Apply AI, prioritizing AI as a complement to human officials rather than a replacement.

Keywords: artificial intelligence; taxation; tax administration; Kenya; Tanzania; domestic resource mobilization; digitalization; tax compliance; machine learning; algorithmic governance.

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1. Introduction

Domestic resource mobilization has become increasingly important for African countries facing expanding expenditure demands, public debt pressures, infrastructure financing requirements, and declining fiscal space. Improving taxation is consequently no longer simply a matter of changing tax rates: governments increasingly need to strengthen their ability to identify taxpayers, understand economic transactions, detect non-compliance and administer increasingly complex economies. The problem is particularly salient in Kenya and Tanzania, where tax-to-GDP ratios remain below the sub-Saharan African average and where large informal sectors, fragmented administrative databases, and limited numbers of trained auditors constrain conventional compliance strategies (Aslett et al., 2024).

Digital technology has already altered tax administration in both countries. Electronic registration, electronic tax returns, mobile payments, electronic fiscal devices, e-invoicing and automated customs systems have expanded the volume of information available to the Kenya Revenue Authority (KRA) and the Tanzania Revenue Authority (TRA). Artificial intelligence represents a further stage in this transformation because it permits governments not merely to collect information but increasingly to interpret, predict and act upon it.

AI can potentially identify unusual transaction patterns, predict taxpayer non-compliance, select high-risk cases for audit, identify networks of related taxpayers, detect fraudulent invoices and customs declarations, provide virtual taxpayer assistance, estimate tax gaps and assist tax officials in interpreting increasingly large volumes of legislation and administrative information (Aslett et al., 2024). Internationally, AI adoption by revenue authorities is no longer experimental: OECD evidence indicates that approximately 72 percent of surveyed tax administrations reported using AI by 2024, with 74 percent of users employing it in detecting evasion and fraud, 64 percent in risk assessment and 59 percent in virtual assistants. Importantly, none of the surveyed administrations allowed AI to make final administrative decisions independently, illustrating the continuing importance of human accountability (OECD, 2025a).

These developments create major opportunities for the Kenyan and Tanzanian administrations, yet generate serious risks. Poor-quality datasets can generate poor-quality predictions; limited legal protection can transform legitimate compliance analytics into intrusive surveillance; historical enforcement biases may be reproduced by algorithms; and cybersecurity breaches could expose some of the most sensitive financial information held by governments. The central research question of this paper is therefore: are Kenya and Tanzania institutionally, technologically, legally and socially ready to integrate artificial intelligence into tax administration? The paper addresses four subsidiary questions: what potential benefits can AI bring; what risks accompany its adoption; what preconditions should the two governments satisfy before deployment; and how does readiness compare between the two countries?

The central argument is that AI readiness should not be equated with possession of an electronic tax system. This distinction is particularly important in Kenya and Tanzania, where digital-tax development has followed distinct trajectories and where recent reforms KRA's AI-powered validation system and TRA's IDRAS platform place the two administrations at different points along the digital-to-intelligent transition

2.0. Literature Review and Conceptual Background

2.1 From traditional taxation to intelligent tax administration

Tax administration traditionally relied on taxpayer declarations, physical documentation, manual audits, and retrospective investigations. Digitalization progressively altered this model, and the development can be conceptually divided into five generations, summarized in Table 1.

Table 1: Five generations of tax administration

Generation	Description	Illustrative features
1. Manual	Paper registration, physical files, manual assessment, cash or bank payment	Pre-digital tax offices
2. Electronic	Electronic registration, e-filing, online payments, digital taxpayer accounts	iTax (Kenya); TRA taxpayer portal (Tanzania)
3. Integrated	Linkage between returns, customs, banking, identity, business registration, e-invoices and third parties	eTIMS–iTax integration (Kenya); IDRAS connectivity (Tanzania)
4. Data-driven	Advanced analytics, automated risk scoring, network analysis, predictive models	KRA compliance analytics; TRA EFD dashboards
5. AI-enabled	Machine learning, intelligent fraud detection, NLP, generative AI, personalised interventions	KRA automated return validation (2026)

Sources: Aslett et al. (2024); OECD (2020); OECD (2025a); author's compilation.

OECD's Tax Administration 3.0 framework promotes the integration of taxation into taxpayers' natural business systems, facilitated by digital identity, connected touchpoints, efficient data management, digital tax rules, necessary skills, and strong governance (OECD, 2020; OECD, 2025a). The generational gap is crucial because AI performs poorly when earlier stages of digital development are incomplete.

2.2 Artificial intelligence in taxation

AI comprises computational methods that perform tasks typically requiring human intelligence, including classification, prediction, language comprehension, pattern recognition, and decision-making. In taxation, AI applications can be categorized into six main groups, outlined in Table 2.

Table 2: Principal AI applications in tax administration

Category	Function	Primary benefit	Risk profile
Compliance risk management	Estimating non-compliance probability from taxpayer characteristics and histories	Focused allocation of scarce audit resources	Moderate
Fraud and evasion detection	Identifying anomalies in VAT invoices, customs declarations and payment behaviour	Earlier detection of coordinated fraud	Moderate to high
Third-party information matching	Comparing declarations against bank, mobile-money, land, customs and payroll data	Revealing undeclared income	High
Taxpayer services	Multilingual virtual assistants and generative AI support	Continuous assistance across dispersed populations	Low to moderate
Revenue forecasting and tax-gap analysis	AI-supported forecasting of VAT gaps and sector risks	Better fiscal planning	Low
Customs administration	Computer vision and network analytics for cargo risk and classification	Trade facilitation with controls	Moderate

Source: Compiled from Aslett et al. (2024) and OECD (2025a).

These applications are particularly relevant to Kenya and Tanzania, where both administrations face large taxpayer bases but relatively few highly trained auditors. Evidence from Kenya illustrates the enforcement gap that AI seeks to address of 759,164 registered firms, only 84,428 paid their taxes for the year ending June 2022, implying an active compliance rate of approximately 11 percent among registered businesses (IFC Review, 2024). In Tanzania, the tax-to-GDP ratio of 11.8 percent in 2022–23 remained well below the sub-Saharan African average of 16 percent, reflecting a large informal sector, limited compliance among formal firms, and constrained enforcement capacity (Siwale et al., 2025).

3. Theoretical Foundation

The paper integrates three complementary perspectives: the Technology–Organization–Environment framework (TOE), institutional theory, and the principles of responsive regulation.

The Technology–Organization–Environment (TOE) framework proposes that the adoption of technological innovation depends on technological capability, organizational characteristics, and the surrounding institutional environment (Tornatzky and Fleischer, 1990). Applied to AI in taxation, technology factors include data quality, computing infrastructure, interoperability, cybersecurity, and the availability of appropriate algorithms; organizational factors include leadership, specialist personnel, budgets, administrative culture, and change-management capabilities; and environmental factors include legislation, taxpayer digitalization, financial inclusion, political institutions, digital identity, and public acceptance. Accordingly:

$$AI \text{ Tax Readiness} = f(\text{Technology, Data, Institutions, Human Capacity, Governance and Taxpayer Environment})$$

Institutional theory highlights how rules, legitimacy, and social norms influence organizational actions. Since taxation depends heavily on legitimacy—because governments have coercive authority over citizens' property—employing opaque algorithms in tax systems without proper legal backing could undermine compliance rather than improve it. Thus, the success of AI in taxation hinges on both Technological Capability and Institutional Legitimacy. A decline in either component risks reducing long-term effectiveness.

Responsive tax administration holds that enforcement should be proportional to taxpayer behavior. Low-risk, compliant taxpayers can receive simplified services and automatic assistance, whereas those exhibiting persistent high-risk behavior may face stronger enforcement. However, an algorithmic risk score should serve as evidence for administrative attention rather than as proof of tax wrongdoing.

4. Methodology

The study employs a comparative qualitative research design based on documentary and institutional analysis, focusing on two cases: Kenya and Tanzania. The two countries were selected because they are the two largest economies in East Africa, host the region's two most consequential revenue authorities undertaking reform, and exemplify two distinct pathways toward AI-enabled taxation: a Kenya pathway in which the revenue authority has moved explicitly toward AI enforcement tools, and a Tanzania pathway in which the authority has first consolidated a fully integrated domestic-tax platform as the foundation for future analytics. The assessment draws on official developments by the KRA and TRA, international institutional reports from the IMF, OECD, World Bank, UNESCO, and ATAF, and relevant peer-reviewed and policy literature.

The countries are evaluated using an AI Tax Administration Readiness Framework (AITARF) developed in this study, comprising the eight dimensions set out in Table 3. Rather than constructing a falsely precise numerical ranking from incomplete, comparable statistics, the paper adopts four qualitative categories: advanced-emerging, moderate, developing, and foundational readiness, which represent analytical assessments rather than official international rankings.

Table 3: The AI Tax Administration Readiness Framework (AITARF) dimensions

Dimension	Principal question
Digital tax infrastructure	Are core tax processes digital?
Data maturity	Is sufficient accurate and structured data available?
Interoperability	Can government and third-party systems exchange information?
Legal and ethical governance	Are privacy, accountability and AI safeguards established?
Human capital	Are tax officials capable of developing, managing and auditing AI?
Cybersecurity	Can sensitive taxpayer information be protected?
Institutional capability	Can the revenue authority manage major technological change?
Taxpayer inclusion and trust	Can taxpayers access, understand and challenge AI-supported processes?

Source: Author's compilation (2026).

5. Conceptual Framework

This section constructs the paper's conceptual framework, combining the three theoretical perspectives into a practical model of effective AI-enabled taxation, as shown in Figure 2.

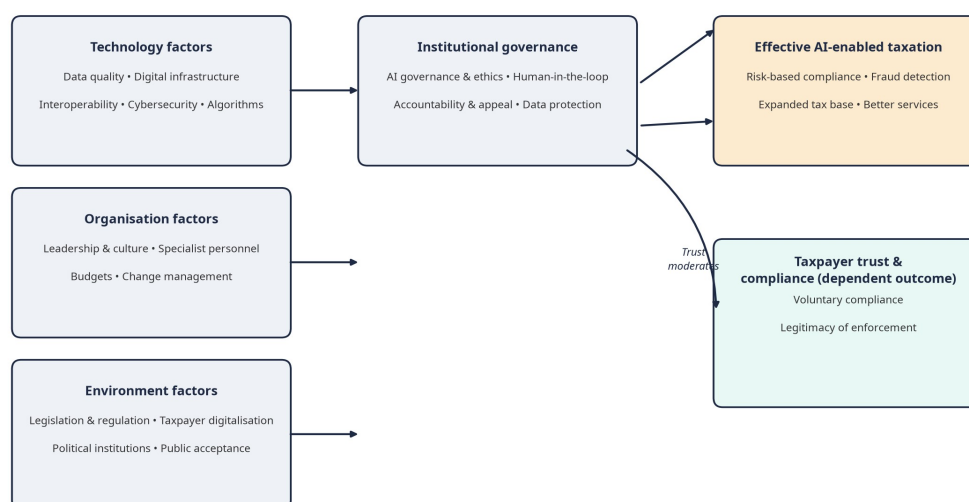
The framework categorizes three independent groups of factors influencing AI-tax performance. Technology factors form the digital foundation, including data quality, digital infrastructure, interoperability, cybersecurity, and suitable algorithms. Organizational factors reflect the internal capacity of the revenue authority, covering

leadership, administrative culture, skilled personnel, budgets, and change-management abilities. Environmental factors encompass external conditions such as legislation, regulation, taxpayer digitalization levels, political institutions, and public acceptance. These three clusters, based on the TOE framework, collectively determine whether a revenue administration can advance from merely having technology to using it effectively.

Institutional governance acts as a secondary factor in this context. According to institutional theory, technological ability only leads to legitimate administrative actions when supported by clear governance structures—such as AI governance and ethics policies, human-in-the-loop decision processes, accountability and appeal systems, and data protection measures. In the absence of governance, AI capabilities may undermine the institutional legitimacy vital for taxation. Therefore, the framework defines Effective AI-enabled Taxation as the combined result of technological and governance factors, including risk-based compliance, fraud and evasion detection, a broader tax base, and enhanced taxpayer services.

Taxpayer trust and compliance are specified as the dependent outcome and, simultaneously, as a moderating condition: per the responsive-regulation perspective, voluntary compliance and perceived legitimacy condition the returns that AI-supported enforcement can generate, creating a feedback loop in which poorly governed AI undermines the trust that future compliance depends upon. The framework generates seven testable propositions (Section 15) and directly structures the readiness assessment in Sections 7 and 8.

Figure 2: Conceptual framework — determinants of effective AI-enabled taxation



6. Digital and AI Landscape in Kenya

Kenya possesses one of the strongest foundations for AI-enabled taxation in East Africa. Long-standing use of the iTax platform, the electronic Tax Invoice Management System (eTIMS) and extensive digital payment infrastructure generates substantial administrative data. From September 2023, Kenya progressively mandated the issuance of electronic tax invoices through eTIMS, which connects invoicing data directly to the tax administration (KRA, 2025c). By June 2026, more than 750,000 taxpayers had been onboarded onto eTIMS, creating a national stream of transaction-level information (KRA, 2026).

Recently, the Kenya Revenue Authority (KRA) has explicitly integrated artificial intelligence, machine learning, and data analytics into its modernization plans (CIO Africa, 2024; CIAT, 2026). The pivotal moment was when KRA announced that, starting from 10 January 2026, it would validate income and expense declarations in both individual and non-individual tax returns by cross-checking with TIMS/eTIMS invoices, Withholding Income Tax gross amounts, and import data from customs systems. This initiative is part of a broader effort to embed AI and machine learning into revenue collection processes (KRA, 2025b). The system detects discrepancies in income declarations, VAT claims, and withholding data, and it verifies taxpayer information against third-party sources in real time (Sacco Review, 2025).

Kenya benefits from a relatively supportive wider institutional environment. UNESCO's assessment of AI readiness informed Kenya's National Artificial Intelligence Strategy 2025–2030, which emphasizes AI digital infrastructure, data ecosystems and governance, along with research, innovation, and commercialization. It also highlights the lack of a dedicated AI legal framework (EY, 2025). In June 2026, Kenya introduced an Artificial Intelligence Bill that proposes a risk-based regulatory framework, establishes an independent AI Commissioner, imposes stricter requirements for high-risk AI systems—including public administration—and introduces transparency safeguards. These safeguards ensure that automated decisions with legal or significant impacts uphold the rights to human intervention, to provide input, and to contest decisions under the Data Protection Act (EY, 2026).

Kenya can therefore be classified as possessing advanced-emerging readiness. Remaining challenges concern algorithmic transparency, data integration across the still-expanding eTIMS base, privacy, cybersecurity, taxpayer appeal rights, and ensuring that digitally visible taxpayers are not systematically targeted relative to less-visible economic activities.

7. Digital and AI Landscape in Tanzania

Tanzania has established important digital foundations through electronic filing, electronic fiscal devices and digital tax payment mechanisms. The electronic fiscal device (EFD) program, introduced in 2010, requires registered businesses to issue tax invoices through devices that transmit transaction data to the TRA in real time (Siwale et al., 2025). EFDs have become central to VAT administration, providing transaction-level information analogous in function to Kenya's eTIMS, although the full analytical potential of this data has historically been limited by processing capacity: revenue authorities in low-income countries seldom cross-check their tax records, and EFD data held in raw form has been difficult to compile and analyze at scale (Kangave et al., 2017; Mascagni et al., 2021; Siwale et al., 2025).

A particularly significant recent development is the Integrated Domestic Revenue Administration System (IDRAS), developed over more than two years and launched nationwide on 9 February 2026. IDRAS consolidates all domestic tax administration — registration, returns, assessments, payments, objections, appeals, debt management, risk indicators and reliefs — into a single digital environment, and is designed to connect the systems of more than 300 institutions, with over 60 already integrated at launch (TRA, 2026a; TRA, 2026b). The Commissioner General stated that IDRAS will enable the TRA to expand the tax base and curb tax evasion by obtaining accurate information on all taxpayers and by implementing the President's directive to make government systems interoperable, thereby enhancing transparency and simplifying service delivery (TRA, 2025).

The analytical use of existing data is also improving. Partnership research between the International Growth Center and the TRA has produced enhanced EFD dashboards allowing aggregate, taxpayer-level and machine-level analysis of sales and receipts, integration of taxpayer, EFD and VAT databases into comprehensive taxpayer profiles, and reconciliation of customs, excise and VAT payments — demonstrating movement from Generation 3 integration towards Generation 4 data-driven administration (Siwale et al., 2025).

The broader AI environment is developing but less advanced than Kenya's. UNESCO completed Tanzania's first national AI Readiness Assessment in 2025, handed to the Minister for Communication and Information Technology at the Africa Internet Governance Forum in Dar es Salaam, and intended to inform a national AI strategy grounded in ethics, inclusion and sustainable development (UNESCO, 2025). Tanzania also possesses the Personal Data Protection Act 2022, in force since May 2023, and a Personal Data Protection Commission (DLA Piper, 2026). The TRA has not yet articulated an explicit AI enforcement agenda comparable to Kenya's, and the immediate strategic priority should be successful data integration and governance of IDRAS before large-scale deployment of high-stakes AI models. Tanzania is consequently assessed as possessing moderate-to-advanced emerging readiness.

8. Comparative Assessment: Kenya and Tanzania

Table 4 summarises the comparative positioning of the two countries.

Table 4: Comparative AI readiness profile — Kenya and Tanzania

Dimension	Kenya	Tanzania
Core tax platform	iTax (e-filing, payment, registration)	IDRAS (launched February 2026); legacy portal replaced
Transaction data capture	eTIMS (mandatory from September 2023; 750,915 taxpayers by June 2026)	Electronic fiscal devices (since 2010); enhanced dashboards under development
AI agenda of revenue authority	Explicit: AI/ML in modernisation; automated return validation from January 2026	Implicit: analytics and risk indicators within IDRAS; no announced AI enforcement programme
Interoperability	API-driven integration with customs, withholding and invoicing data	300+ institutional systems to be connected; presidentially mandated interoperability
AI policy environment	National AI Strategy 2025–2030; Artificial Intelligence Bill 2026 published	UNESCO national AI Readiness Assessment (2025); strategy forthcoming
Data protection	Data Protection Act 2019; Office of the Data Protection Commissioner	Personal Data Protection Act 2022; Personal Data Protection Commission
International support	UNESCO AI readiness assessment	UNESCO assessment; World Bank tax modernisation; ATI/IGC partnerships
Overall assessment	Advanced-emerging readiness	Moderate-to-advanced emerging readiness

Sources: Compiled from KRA (2025a; 2026), TRA (2025; 2026a; 2026b), EY (2025; 2026), UNESCO (2025), Siwale et al. (2025). The classifications are analytical assessments, not official rankings.

The most important conclusion from Table 4 is that neither country is uniformly ready for full AI taxation, but neither is starting from zero. Kenya leads in the explicit deployment of AI-supported enforcement, while Tanzania leads in the foundational consolidation of its tax-platform architecture; each country's comparative advantage implies a different sequencing of remaining reform tasks.

9. Preconditions for AI Integration in Tax Administration

Eight conditions should substantially be satisfied before AI is deployed for high-impact tax administration. These preconditions, summarised in Table 5, apply to both countries.

Table 5: Preconditions for high-impact AI deployment — status in Kenya and Tanzania

Condition	Requirement	Kenya	Tanzania
1. Complete core digitalisation	Reliable e-registration, unique taxpayer IDs, e-filing, e-payment, e-invoicing, digital accounts	Largely satisfied (iTax, eTIMS)	Satisfied with IDRAS launch (February 2026)
2. High-quality, integrated data	Interoperable VAT, income tax, PAYE, customs, business, land and procurement datasets	Substantial but expanding; eTIMS onboarding ongoing	Improving; 300+ system integration in progress
3. Digital identity	Reliable identification of persons and businesses across authorised systems	National ID and eCitizen progressing	National ID programme progressing
4. Data protection legislation	Lawful collection, purpose limitation, minimisation, retention, sharing, taxpayer access	Data Protection Act 2019 in force	PDPA 2022 in force since May 2023
5. AI governance and accountability	Purpose, legal basis, training data, bias testing, review, human oversight	National AI Strategy 2025–2030; AI Bill 2026 published	Readiness assessed; strategy forthcoming
6. Human-in-the-loop decisions	Final assessments, penalties, prosecution remain with human officers	Required by proposed AI Bill s.28 safeguards	To be embedded in IDRAS procedures
7. Cybersecurity capability	Protection of integrated revenue databases	Growing, under ODPC oversight	Growing, under PDPC oversight
8. Skilled personnel	Multidisciplinary teams across tax, data science, law and audit	Developing; vendor dependence a risk	Developing; partner-supported analytics

Source: Author's assessment based on documentary evidence reviewed in this paper.

The correct sequence should be Digitize → Integrate → Govern → Analyze → Automate → Apply AI; jumping directly from fragmented manual records to AI creates what might be termed algorithmic leapfrogging risk. On core digitalization (Condition 1), both countries score strongly. On integrated data (Condition 2), Kenya is wiring eTIMS invoice, withholding, and customs data into return validation (KRA, 2025b), while Tanzania is connecting more than 300 institutional systems to IDRAS (TRA, 2026a); OECD evidence confirms that advanced administrations increasingly receive data directly from taxpayers' business systems through machine-to-machine exchanges (OECD, 2025a). On AI governance (Condition 5), the countries diverge: Kenya has published a draft statutory framework imposing risk-based obligations on public-sector AI (EY, 2026), whereas Tanzania's agenda remains at the readiness-assessment stage (UNESCO, 2025). This divergence matters because among surveyed tax administrations using AI, 87 percent reported limitations on AI usage while fewer had formal ethical frameworks, demonstrating that AI capability and governance do not automatically develop together (OECD, 2025a). The technical capacity to obtain information should never automatically imply the legal authority to use it, and final decisions on assessments, penalties, prosecution, and asset actions must remain with authorized human officers to protect due process and contain the consequences of false algorithmic predictions.

10. Potential Benefits of AI for Kenyan and Tanzanian Taxation

The first major benefit is improved domestic revenue mobilization through better identification of non-compliance. Although AI-specific causal evidence remains limited, broader evidence on tax digitalization is encouraging. IMF research indicates substantial complementarities between business digitalization and government digital capacity, with stronger firm digitalization associated with higher tax revenue and improved compliance, particularly among higher-risk firms (Nose, 2025). For Kenya, where only about 11 percent of registered firms were active taxpayers in FY2021/22 (IFC Review, 2024), and for Tanzania, where the tax-to-GDP ratio lags the regional average (Siwale et al., 2025), even modest improvements in active compliance would yield substantial fiscal returns.

Predictive analytics can rank taxpayers by compliance risk, enabling auditors to focus on higher-value cases and improving revenue recovered per audit hour. Kenya's automated validation system embodies this logic by directing enforcement attention to returns that contain mismatches with third-party data (KRA, 2025b). AI can also identify unusual VAT refund claims, invoice networks, customs valuations, related-party transactions, and registration patterns, with network analysis particularly useful against coordinated fraud. Kenya's real-time reconciliation of eTIMS invoices against withholding and customs records, and Tanzania's EFD-based reconciliation of customs, excise, and VAT payments, illustrate this trajectory (Sacco Review, 2025; Siwale et al., 2025). Routine activities can increasingly be automated, freeing trained officials to focus on complex investigations and disputes, while multilingual virtual assistants could support English and Kiswahili speakers across geographically dispersed populations. AI-supported data integration can identify registration gaps and expand the tax base — though it should identify, rather than automatically penalize, such gaps — and automation may reduce direct taxpayer–official interactions that create opportunities for informal payments, although corruption can migrate toward manipulation of data systems or procurement contracts.

11. Risks and Disadvantages

Table 6 summarises the principal risks and their mitigations.

Table 6: Principal risks of AI in tax administration

Risk	Description	Mitigation
Algorithmic bias	Models trained on historical audits reproduce past targeting, creating feedback loops	Bias testing, diverse training data, independent review
False positives	Compliant taxpayers misidentified as suspicious, costly for SMEs	Human review, appeal mechanisms, error monitoring
Lack of explainability	Taxpayers cannot understand selection for investigation	Explainability standards, right to meaningful reasons
Privacy and surveillance	Combining tax, land, banking and procurement data expands surveillance capacity	Purpose limitation, minimisation, strong enforcement
Cybersecurity vulnerabilities	Centralised revenue databases become high-value targets	Dedicated cybersecurity investment and incident response
Digital exclusion	Mandatory digital systems disadvantage rural, elderly and low-literacy taxpayers	Alternative channels, assisted digital support
Skills shortages and dependency	Dependence on foreign vendors for systems and their audit	Local capability building, retained internal expertise
AI hallucination	Generative AI producing convincing but incorrect legal explanations	Controlled knowledge bases, testing, disclaimers
Automation bias	Officials treating risk scores as proof of wrongdoing	Training that prediction is not legal evidence

Source: Author's compilation, drawing on OECD (2025a) and Aslett et al. (2024).

Algorithmic bias deserves particular emphasis: if historical audits disproportionately targeted certain sectors, locations, or groups, a model trained on such data reproduces these patterns, learning past enforcement behavior rather than underlying non-compliance. Generative AI creates a distinctive risk: a taxpayer chatbot that invents an exemption or misstates a deadline could cause financial harm, so generative outputs concerning legally binding obligations require controlled knowledge bases, continuous testing and disclaimers.

12. AI Tax Administration Readiness Framework and Recommended Adoption Model

This paper proposes the AITARF model, an eight-layer architecture presented in Figure 1. The framework demonstrates that AI constitutes the top rather than the bottom of the tax-technology architecture: applications rest upon analytics capability, which rests upon governance and ethics, which in turn rest upon cybersecurity, interoperability, reliable data, electronic tax administration, institutional and legal foundations.



Figure 1: AI Tax Administration Readiness Architecture (AITARF)

A risk-based, phased deployment strategy is recommended for both countries, summarised in Table 7.

Table 7: Phased AI deployment strategy

Phase	Applications	Risk profile	Governance requirement
Phase I: Low-risk	Internal classification, translation, FAQ assistants, knowledge search, forecasting, workflow optimisation	Limited direct consequences for taxpayer rights	Basic documentation and oversight
Phase II: Medium-risk	Taxpayer segmentation, compliance-risk scoring, anomaly detection, VAT fraud identification, customs risk analysis	Outputs remain recommendations to human officials	AI governance committees, bias testing, impact assessments
Phase III: High-risk	Assessments, penalties, enforcement, prosecution, asset freezing, disputes	Legally consequential outcomes	Strong statutory safeguards, human-in-the-loop, appeals; never deployed merely because technology exists

Source: Author's compilation.

Phase I functions have limited direct consequences for taxpayer rights and can proceed while governance systems are established; Phase II applications may proceed once governance structures exist, provided outputs remain recommendations to human officials; Phase III applications require substantially stronger legal safeguards.

13. Discussion: Are Kenya and Tanzania Ready?

The answer is neither simply yes nor no, and the two countries merit differentiated conclusions. Kenya is the more advanced case and is ready for controlled, governed AI deployment. It has sufficient digital foundations — iTax, eTIMS and deep third-party data integration — to expand AI-supported risk analysis, fraud detection, taxpayer services and audit selection, and it has already begun doing so with the January 2026 automated validation system. Its AI policy environment, comprising the National AI Strategy 2025–2030 and the published AI Bill 2026, is ahead of most African peers. However, legally consequential decisions should remain human-controlled, and the AI Bill must be enacted and operationalized before high-risk applications are contemplated.

Tanzania is almost ready, but integration should precede extensive AI deployment. The launch of IDRAS in February 2026 completes the most fundamental prerequisite: a single integrated domestic revenue platform connected to hundreds of government systems. The immediate strategic priority should be consolidating integrated tax information, strengthening data governance and exploiting the new platform's analytics potential, drawing on the demonstrated EFD-dashboard gains, before committing to large-scale high-stakes AI. Tanzania's forthcoming national AI strategy and developing data-protection regime will determine the pace at which Phase II applications become defensible.

The comparison yields a broader insight captured in Table 8.

Table 8: Two pathways towards AI-enabled taxation

Strategic element	Kenya's pathway	Tanzania's pathway
Entry point	Early AI adoption on an already-mature platform	Platform consolidation first, AI adoption next
Signature reform	Automated AI return validation (January 2026)	IDRAS integration of 300+ institutional systems (February 2026)
AI policy maturity	Strategy plus draft statute	Readiness assessment; strategy in preparation
Key immediate task	Operationalising AI governance and transparency safeguards	Governing IDRAS data and building analytics capability

Source: Author's synthesis.

In both countries, technology deployment is outpacing the corresponding governance architecture. Kenya illustrates the risk of capability preceding accountability; Tanzania illustrates the discipline of building foundations before scale. Each country can learn from the other's sequencing choices.

14. Policy Recommendations

Governments should first identify the specific administrative problem they aim to solve before purchasing AI tools; the focus should be on the problem, not on the choice of AI platform. AI governance committees ought to be formed within both the KRA and the TRA, including experts from tax administration, ICT, data science, legal services, cybersecurity, internal audit, taxpayer services, and data protection. Before deploying high-impact AI models, Algorithmic Impact Assessments should evaluate factors such as necessity, proportionality, privacy, bias, explainability, security, and the potential consequences of errors. A taxpayer's right to human review must be established: those affected by AI decisions should know when automation is involved, receive clear explanations, correct erroneous data, challenge decisions, and request review by a qualified human official. These safeguards are already outlined in Kenya's proposed AI Bill (EY, 2026), which Tanzania should adopt in a similar manner. Both nations should develop local AI expertise through structured programs for tax data scientists, digital tax auditors, AI governance experts, and cybersecurity specialists, with an emphasis on partnerships with East African universities. Additionally, they should set up AI audit functions within internal and supreme audit bodies to review training data, model assumptions, accuracy, bias, access controls, and decision logs. Finally, digital transformation should not restrict access for taxpayers who cannot use advanced digital systems; alternative service channels must be maintained, especially for rural residents, elderly taxpayers, and microenterprises.

15. Research Propositions

The framework outlines propositions that are suitable for future empirical testing. P1 suggests that digital tax infrastructure is positively linked to AI readiness in tax administration. P2 indicates that data interoperability enhances the relationship between digitalization and AI effectiveness. P3 posits that AI-supported compliance analytics improve the efficiency of tax collection. P4 states that institutional trust strengthens the link between AI adoption and voluntary tax compliance. P5 notes that weak AI governance diminishes the positive effect of AI adoption on taxpayer trust. P6 highlights that human capital capacity boosts the effectiveness of AI-supported tax administration. P7 asserts that algorithmic transparency increases taxpayer acceptance of AI-supported tax administration. These propositions set the stage for future quantitative research involving tax officials, businesses, and taxpayers in Kenya and Tanzania. For example, a valuable study could compare whether AI-driven audits yield higher tax revenue per audit than traditional risk-selection methods, using Kenya's 2026 validation system and Tanzania's IDRAS risk modules as natural experiments.

16. Implications for Theory, Limitations and Conclusion

This paper contributes to the literature in three respects. First, it distinguishes digital readiness from artificial-intelligence readiness, demonstrating that AI introduces qualitatively different requirements concerning explainability, algorithmic accountability and automated inference. Second, it extends the TOE framework by adding taxpayer legitimacy and algorithmic governance. Third, it proposes that the relationship between AI and revenue mobilization is conditional rather than automatic:

AI Tax Performance = Digital Infrastructure × Data Quality × Institutional Capability × Governance × Human Capital × Taxpayer Trust, such that weaknesses in any one dimension can substantially reduce the benefits of technological sophistication.

The study is primarily conceptual and relies on publicly available secondary information. Disclosure of the internal technological capabilities of the KRA and TRA is uneven, particularly because compliance analytics and fraud-detection methodologies are legitimately confidential; the readiness categories should therefore be interpreted as comparative assessments rather than definitive technological audits. Future research could strengthen the framework through surveys of KRA and TRA officials, interviews with commissioners, ICT directors, and tax auditors, taxpayer surveys on algorithmic trust, direct assessment of data interoperability, analysis of audit-selection outcomes before and after AI implementation, particularly following Kenya's January 2026 rollout — and construction of a quantitative AI Tax Readiness Index.

Artificial intelligence has the potential to transform taxation in Kenya and Tanzania: it can improve fraud detection, strengthen compliance risk management, expand taxpayer services, reduce administrative costs, and

enable governments to extract substantially greater value from growing volumes of digital information. Kenya has already crossed a significant threshold with its AI-powered return-validation system, and Tanzania has completed the foundational platform consolidation on which responsible AI can later be built. However, AI cannot compensate for weak institutions, incomplete taxpayer registers, fragmented databases, unreliable information, or insufficient legal safeguards. The relevant question is therefore not whether the Kenyan and Tanzanian governments can purchase AI technologies (increasingly, they can), but whether they possess the institutional foundations necessary to use them responsibly. The most appropriate pathway for both countries is evolutionary: Digitize first. Integrate second. Govern third. Analyze fourth. Automate fifth. Apply artificial intelligence sixth. AI should initially augment tax officials rather than replace them; the ultimate objective should be a tax authority that is more effective, fair, transparent, accountable, and trusted because of technology. This distinction will determine whether artificial intelligence strengthens the fiscal social contract or undermines it.

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