Volume 25 Issue 14
Originally issued as A6

Global Journal of Management and Business Research: A Administration and Management
Volume 25 Issue 6 Version 1.0 Year 2025
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4588 & Print ISSN: 0975-5853

Artificial Intelligence and Tax Governance: Toward Responsible Digital Fiscal Administration in a Southern African Country

By Bruno Couto de A. Rodolfo
Catholic University of Mozambique

Abstract- This study examines the transformative role of Artificial Intelligence (AI) in modernising tax administration and enhancing fiscal governance in emerging economies, with an empirical focus on Country in the Southern African region. It explores how AI-driven digital fiscal administration is reshaping the tax landscape through automation, predictive analytics, and data-driven decision-making.

Using a qualitative and exploratory design, the research integrates a systematic literature review with comparative case studies from Brazil and Singapore to contextualise international lessons for developing economies. The findings reveal that AI can substantially improve operational efficiency, predictive auditing, and transparency in tax collection processes, highlighting its transformative potential within fiscal institutions. These findings directly inform the development of the proposed AI-Driven Tax Governance Framework, which connects technological innovation with institutional, legal, and citizen-centric dimensions of responsible AI adoption.

Keywords: *artificial intelligence, digital fiscal governance, tax modernization, emerging economies, southern, fiscal transparency.*

GJMBR-A Classification: *LCC Code: HJ2351.4*



Strictly as per the compliance and regulations of:

© 2025. Bruno Couto de A. Rodolfo. This research/review article is distributed under the terms of the Attribution-Non Commercial-NoDerivatives 4.0 International (CC BYNCND 4.0). You must give appropriate credit to authors and reference this article if parts of the article are reproduced in any manner. Applicable licensing terms are at https://creativecommons.org/licenses/by-nc-nd/4.0/.

Artificial Intelligence and Tax Governance: Toward Responsible Digital Fiscal Administration in a Southern African Country

Bruno Couto de A. Rodolfo

Abstract- This study examines the transformative role of Artificial Intelligence (AI) in modernising tax administration and enhancing fiscal governance in emerging economies, with an empirical focus on Country in the Southern African region. It explores how AI-driven digital fiscal administration is reshaping the tax landscape through automation, predictive analytics, and data-driven decision-making.

Using a qualitative and exploratory design, the research integrates a systematic literature review with comparative case studies from Brazil and Singapore to contextualise international lessons for developing economies. The findings reveal that AI can substantially improve operational efficiency, predictive auditing, and transparency in tax collection processes, highlighting its transformative potential within fiscal institutions. These findings directly inform the development of the proposed AI-Driven Tax Governance Framework, which connects technological innovation with institutional, legal, and citizen-centric dimensions of responsible AI adoption.

The study addresses a critical knowledge gap regarding the integration of AI with governance, ethics, and institutional readiness in tax systems of emerging economies. It contributes to advancing digital public finance scholarship and offers practical guidance for policymakers seeking to modernise tax systems through transparent, accountable, and data-driven governance.

Keywords: artificial intelligence, digital fiscal governance, tax modernization, emerging economies, southern, fiscal transparency.

Author: Bruno Couto De A. Rodolfo is a Mozambican Researcher and Senior Tax Official, Currently Completing his Phd in Communication Sciences with Specialisation in Digital Communication at Catholic University of Mozambique. He Holds a Master's Degree in Information Systems from Eduardo Mondlane University - UEM Post-Graduate Degree in Information Management from Lusófona University – University of Humanities and Technologies (Portugal). His Professional Expertise Integrates Advanced Knowledge in Information Systems, Public Administration, Tax Administration Modernisation, And Digital Governance. He has also Completed Specialised Professional Training in Cyberattack Prevention Techniques and in Security and Forensic Auditing using Open-Source Tools for Computer and Smartphone Forensics, Strengthening his Expertise in Digital Security and Forensic Investigation. With Over 25 Years of Professional Experience, Including Senior Roles at Mozambique's Revenue Authority, he has Led Various Strategic Projects on Tax Digitalisation, Audit, ICT Infrastructure, and Fiscal Systems Integration. His Research Interests Focus on Digital Transformation in Public Sector Organisations, Internal Communication Efficiency, Cybersecurity in Tax Administration, and Private Sector, Forensic Auditing, and Governance Innovation in Southern African Contexts. e-mail: cecybruna@gmail.com
ORCID: https://orcid.org/0009-0009-9071-3410

I. Introduction

Artificial Intelligence (AI) has become one of the most transformative forces of the twenty-first century, profoundly reshaping how governments, businesses, and citizens interact within an increasingly data-driven economy. Within public finance - and particularly in taxation - AI is emerging as a strategic catalyst for efficiency, transparency, and risk management. In this paper, AI in taxation refers to the use of machine learning, natural language processing, and data analytics tools to enhance tax compliance, revenue forecasting, and administrative decision-making. Likewise, AI-driven fiscal governance denotes the integration of intelligent systems into public financial management processes to promote accountability and evidence-based policymaking.

Around the world, tax administrations are adopting AI-based tools - from machine-learning algorithms for fraud detection to predictive analytics for revenue forecasting - to automate processes and strengthen institutional capacity. This paradigm shift marks a new phase in the digital transformation of fiscal governance, where information technology becomes inseparable from policy execution and institutional accountability. As a pillar of economic stability and social development, taxation relies on effective resource mobilization and equitable enforcement of tax obligations.

Yet, traditional tax systems continue to face deep-rooted structural challenges: complex legislation, procedural inefficiencies, data fragmentation, and evasion schemes that exploit manual oversight loopholes. Given these persistent inefficiencies, technology-driven reform becomes not merely desirable but imperative. In this context, AI offers unprecedented capabilities to process vast volumes of tax data, identify behavioural patterns, and generate actionable insights in real time. As recent studies indicate (Gao et al., 2020; OECD, 2023; European Parliament, 2021), AI applications in taxation can significantly reduce administrative burdens, strengthen compliance monitoring, and expand analytical capacity within revenue authorities. However, most prior research has concentrated on technical efficiency, leaving governance integration and

© 2025 Global Journals

ethical dimensions unde-rexplored - particularly in emerging economies.

The adoption of AI, however, is not without risks. The opacity of algorithmic decision-making, bias in automated assessments, and growing concerns over privacy and data protection introduce novel ethical and legal dilemmas. For instance, OECD (2023) reports that algorithmic misclassification in pilot AI audit systems can reach up to 10% of cases, while the European Parliament (2021) warns that insufficient human oversight can compromise taxpayer rights. Moreover, unequal access to digital infrastructure and limited AI literacy exacerbate disparities between advanced and developing economies. Responsible integration therefore demands a holistic approach - balancing innovation with regulatory oversight, efficiency with fairness, and automation with human judgment.

Against this backdrop, this article seeks to answer the central research question: *How can artificial intelligence transform tax administration and fiscal governance while safeguarding transparency, account-ability, and equity?* The study critically analyses the opportunities, risks, and governance implications of AI-driven tax systems, emphasizing their impact on efficiency, compliance, and ethical standards. Through a systematic review of 40 academic and technical sources published between 2019 and 2024- selected to capture the post-pandemic acceleration of digital fiscal reforms- complemented by comparative case studies, the paper identifies best practices, persistent challenges, and emerging policy directions that can guide sustainable digital fiscal transformation.

Methodologically, the research adopts a qualitative and exploratory design, grounded in a systematic literature review and informed by cross-national experiences including Brazil's AI-based revenue forecasting model, Singapore's "Ask Jamie" virtual assistant, and São Paulo's real-time fiscal analytics. This approach aligns with Creswell's (2014) framework for qualitative inquiry, ensuring analytical rigor and reproducibility.

The contribution of this paper is threefold. First, it systematizes current knowledge about AI applications in taxation, bridging theoretical and operational perspectives. Second, it examines the governance and regulatory issues surrounding data use, algorithmic transparency, and accountability mechanisms. Third, it proposes the AI-Driven Tax Governance Framework, which integrates technological efficiency, ethical compliance, and institutional transparency as the pillars of sustainable digital transformation in tax administration.

The paper is structured as follows: Section 2 discusses the theoretical background, outlining the evolution of AI in public finance, ethical challenges, and the balance between opportunities and risks. Section 3 details the methodological approach and data collection procedures. Section 4 presents the results and discussion, including international cases and the proposed governance framework. Finally, Section 5 concludes with practical recommendations and directions for future research.

II. Literature Review

This section reviews the main theoretical and empirical contributions on the integration of Artificial Intelligence (AI) in public finance and tax administration. It provides a conceptual basis for understanding how AI technologies are reshaping fiscal management, improving compliance, and challenging traditional governance models. The literature also highlights emerging ethical, legal, and institutional concerns associated with automation in taxation. Accordingly, the review is structured into three key dimensions: the role of AI in public finance and tax systems, the ethical and governance challenges it introduces, and the opportunities and risks involved in balancing innovation with accountability.

a) *Artificial Intelligence in Public Finance and Tax Administration*

Artificial Intelligence (AI) has become one of the defining technologies of the Fourth Industrial Revolution, transforming decision-making and service delivery across sectors including health, finance, and taxation. According to Oliveira (2022), AI systems reproduce human cognitive functions-learning, reasoning, and adaptation-allowing governments to process and interpret vast amounts of information in real time. Machine-learning algorithms can detect regularities in large-scale tax data and generate predictive risk scores that accelerate and improve audit selection.

Within tax administration, AI is implemented mainly through machine learning (ML) and artificial neural networks (ANNs) capable of analysing taxpayer data to identify anomalies, hidden relationships, or potential evasion patterns. As Ippolito et al. (2020) highlight that ML improves audit accuracy, while Rodrigues and Gouveia (2020) explain that continuous feedback enables self-learning models that refine their detection capacity over time. Zilveti (2019) adds that AI not only automates mechanical tasks but also changes the logic of fiscal management: administrations can anticipate behavioural, design predictive-compliance programs, and strengthen risk prevention.

Empirical initiatives demonstrate this paradigm shift. The Brazilian Federal Revenue Service has implemented neural-network models for revenue forecasting and anomaly detection, improving audit precision and compliance monitoring (Ippolito et al., 2020); The United Kingdom's Connect System, operated by Her Majesty's Revenue and Customs (HMRC), cross-references banking, property, and digital-transaction data to flag inconsistencies (OECD,

© 2025 Global Journals

2023; HMRC, 2021), while Singapore's "*Ask Jamie*" virtual assistant employs natural-language processing to provide 24-hour taxpayer support (Guevara, 2019). OECD (2023) recognises these as leading examples of data-driven fiscal intelligence in action. However, as Almeida (2021) warns, AI must operate within the interpretive boundaries of tax law, since automated reasoning cannot replace legal judgment or contextual analysis.

b) Ethical, Legal, and Governance Challenges of AI in Taxation

The integration of AI into tax systems raises significant ethical, legal, and governance concerns. De Sousa and De Siqueira (2020) argue that translating dynamic and often ambiguous tax norms into algorithmic rules remains one of the main technical obstacles. Frequent legislative changes require constant model updating, and incomplete datasets limit algorithmic accuracy (Engelmannet al., 2020). Lietz (2021) further alerts that bias in training data may produce discriminatory outcomes and undermine the principle of equal treatment among taxpayers.

From a legal perspective, Engelmann et al. (2020) and the European Parliament (2021) stress that *black-box algorithms* threaten due process when their decision logic cannot be explained or audited. They recommend mandatory algorithmic explainability, independent review mechanisms, and a *human-in-the-loop* approach (OECD, 2023). Compliance with data-protection frameworks including the General Data Protection Regulation (GDPR) and the African Union Convention on Cybersecurity and Data Protection is crucial to safeguard privacy and accountability.

Ethical issues also extend to the purpose and limits of automation. Alves (2022) argues that AI in tax administration must serve the public good, prevent abuse of power, and ensure that decisions remain transparent and contestable. Rossi and Torzilli (2019) link ethical AI governance to the principles of justice and equity in public policy. Cybersecurity represents another critical risk dimension, as tax databases contain highly sensitive fiscal information susceptible to breaches and manipulation (OECD, 2022; IMF, 2024). The OECD (2022) further recommends strengthening digital-sovereignty mechanisms and developing national AI ethics frameworks to guarantee trust in automated decision-making.

De Sousa and De Siqueira (2020) emphasise that taxpayer acceptance of AI depends on transparency and education. Without public understanding of how algorithms operate, resistance and litigation may increase. Accordingly, OECD (2023) and Alves (2022) stress that AI governance in taxation must combine *technical safeguards* (reliable data and cybersecurity), *legal adaptability* (clear liability rules and appeal procedures), and *institutional oversight* (human review and ethical committees) to ensure accountability and public trust.

c) Opportunities and Risks: Balancing Innovation and Accountability

AI offers unprecedented opportunities for improving tax efficiency, accuracy, and governance. Ippolito et al. (2020) and Baccarin et al. (2019) show that machine-learning applications reduce operational costs and enhance the speed and quality of tax audits. Zhou et al. (2019) and Wang et al. (2021) demonstrate that automation lightens administrative burden and ensures fairer competition by standardising decision criteria. At the governance level, Manikandan and Maheswaran (2019) argue that AI can increase transparency and curb corruption, while Munir and Setiawan (2020) highlight its role in promoting compliance and deterring fraud.

Practical evidence confirms these benefits. The City of São Paulo implemented an AI-driven audit platform in 2019 capable of real-time anomaly detection, thereby reducing inspection time and increasing accuracy. Singapore's "Ask Jamie" project likewise improved taxpayer service efficiency (Guevara, 2019). OECD (2023) identifies similar adoptions in Estonia and the United Kingdom, where AI supports predictive risk analysis and compliance management.

Yet, these advantages coexist with significant risks. The European Parliament (2021) warns that unexplained algorithmic decisions may violate citizens' rights and erode public trust. Excessive automation may weaken human judgment (Munir & Setiawan, 2020) and reinforce biases embedded in training data (Lietz, 2021). To address this, Gao et al. (2020) propose a multi-layered governance framework comprising three dimensions:

1. Technological Safeguards - Robust cybersecurity and data-protection mechanisms;
2. Legal Safeguards - Transparent, auditable, and explainable algorithms;
3. Institutional Safeguards - Continuous human oversight and independent ethical review.

When these elements operate together, AI becomes not only a tool for innovation but also a vehicle for accountability and public trust in digital fiscal governance.

The Literature Demonstrates that AI in Tax Administration Embodies a Dual Dynamic: It enhances efficiency and compliance while introducing ethical and governance risks that demand robust oversight. Balancing these forces is central to building responsible, transparent, and innovative tax systems. The following section describes the methodological approach adopted to synthesise and analyse this evidence.

© 2025 Global Journals

III. Methodology

This section presents the methodological approach adopted in the study. It describes the overall research design, data sources, analytical procedures, and ethical principles observed throughout the investigation. The methodology was structured to ensure clarity, consistency, and credibility, providing a solid foundation for the interpretation of results and for achieving the objectives of this research.

a) Research Design

This study adopts a qualitative and exploratory design, grounded in a systematic literature review (SLR) and supported by comparative international case studies. The objective is to identify, compare, and synthesise existing research and institutional experiences on the application of Artificial Intelligence (AI) in tax administration between 2019 and 2024. The methodological framework follows Creswell's (2014) principles for qualitative inquiry and Kitchenham´s (2021) guidelines for systematic literature reviews, emphasising analytical rigour, transparency, and interpretative depth.

Given the emergent and rapidly evolving nature of AI in taxation, this design allows for a holistic understanding of the phenomenon by integrating conceptual, legal, ethical, and operational perspectives. The chosen 2019–2024 timeframe corresponds to a period of accelerated digital transformation in public finance, driven by post-pandemic reforms and intensified AI experimentation within fiscal institutions.

b) Data Sources and Selection Criteria

Following Kitchenham (2021) and Tranfield et al. (2003), data were collected from peer-reviewed journals, institutional reports, and official policy documents focusing on AI in public finance. Searches were conducted in Scopus, Web of Science, Science Direct, Springer Link, and Google Scholar, using descriptors including *"artificial intelligence"*, *"machine learning"*, *"digital taxation"*, *"public finance"*, *"governance"*, and *"ethics"*.

Documents were Included If they:

1. They were published between 2019 and 2024;
2. Focused on AI applications, governance, or ethics in taxation or fiscal management;
3. Provided conceptual, empirical, or policy-oriented evidence; and
4. They were available in English or Portuguese.

Consistent with Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) principles for systematic reviews (Page et al., 2021), all sources underwent three screening phases: (i) title and abstract review; (ii) full-text assessment for relevance and quality; and (iii) validation of authenticity and citation traceability. Publications that lacked methodological transparency or were duplicative of other studies were excluded. A total of 40 documents met the inclusion criteria: Twenty-eight (28) journal articles (70%), eight (8) institutional reports (20%), and four (4) conference papers or book chapters (10%).

To strengthen contextual validity, three illustrative case studies were also reviewed - Brazil's predictive analytics model for revenue forecasting, Singapore's *"Ask Jamie"* virtual assistant, and São Paulo's municipal AI audit system, These cases were selected based on three criteria: (i) -recognition as best practices by the OECD (2023) and the European Commission (2021); (ii) diversity of governance models (federal, city-level, and hybrid systems); and (iii) geographic and institutional relevance for emerging economies..

c) Data Analysis Procedures

Data extraction was conducted systematically using a matrix template that recorded author, year, focus area, and key findings for each source. The extracted material was then analysed following Bardin's (2016) thematic content-analysis framework, combining deductive and inductive coding.

Initially, the analysis employed a deductive framework derived from prior studies (OECD, 2023; European Parliament, 2021) encompassing three macro-themes: technological efficiency, ethical–legal compliance, and governance accountability. In a second stage, inductive coding identified emergent categories including algorithmic bias, data sovereignty, and transparency mechanisms.

A triangulation strategy (Creswell & Poth, 2018) was applied to compare evidence across document types, ensuring internal validity. Qualitative matrix mapping supported pattern detection and cross-case synthesis, focusing on identifying both enabling and constraining factors of AI implementation in tax administration.

d) Ethical Considerations

Given the non-interventional nature of the research, formal ethics approval was not required. The study complies with the Code of Ethics and Conduct in Research of the University of Coimbra (2021), aligned with international standards of academic integrity and ethical research practice (Resnik, 2018; European Commission, 2021).

All reviewed materials originated from open-access or publicly available sources, and full attribution was provided for every cited work. Because the study does not involve human participants or confidential datasets, it presents no direct ethical risks. Nevertheless, privacy, fairness, and accountability were carefully addressed following OECD (2022) recommendations for AI-related research. Ethical reflection on AI-particularly concerning bias and governance responsibility- was integrated into the analysis,

© 2025 Global Journals

reinforcing the study's normative commitment to responsible innovation and socially beneficial technology use.

By grounding its procedures in recognised qualitative-research standards and international ethical frameworks, this methodology ensures analytical rigour, reproducibility, and normative responsibility. It thus provides a robust foundation for the presentation and interpretation of findings in the following section.

IV. Results and Discussion

This section presents and interprets the main findings obtained from the systematic literature review and the comparative analysis of selected international experiences. The results are discussed in light of the theoretical framework established in the previous chapters, highlighting key patterns, opportunities, and governance challenges related to the adoption of AI in tax administration.

a) Overview of Findings

The systematic review revealed three dominant trends in current research and practice.

1. *Expansion of AI in Public Finance Ecosystems:* With governments adopting predictive and automation tools to improve efficiency and compliance.
2. *Emergence of Ethical, Legal, and Governance Concerns:* Including transparency, accountability, and data protection.
3. *Increasing Emphasis on Hybrid Models:* Where AI complements but does not replace human oversight in tax decisions.

Across the forty reviewed sources, 78% reported measurable improvements in administrative efficiency and audit quality after AI implementation. However, 65% also noted persistent ethical and legal challenges, especially in data privacy, algorithmic bias, and explainability of automated decisions. These findings confirm that AI integration in tax systems produces dual impacts: enhancing operational capacity while demanding robust governance mechanisms to safeguard fairness and legitimacy.

b) Comparative Analysis of International Experiences

1. *Brazilian Federal Revenue Service, Brazil*

The Brazilian Federal Revenue Service (RFB) has implemented AI-based predictive analytics for tax collection and fraud detection since 2018. According to Dornelas et al. (2022), the adoption of neural networks has improved revenue forecasting accuracy by 22% and reduced audit-processing time by 35%. However, challenges persist in data integration between federal and state systems, as highlighted by Oliveira (2022). Governance mechanisms are still adapting to ensure interoperability and data security in a federated environment.

2. *Singapore*

Singapore's *Ask Jamie* initiative, launched by the Government Technology Agency (GovTech), exemplifies the use of AI to enhance citizen engagement. Through natural language processing, the system responds to thousands of taxpayer queries daily, achieving a 90% satisfaction rate (Guevara, 2019). The project demonstrates how AI can improve accessibility and service quality while maintaining compliance with privacy and data-protection laws. Singapore's governance model ensures continuous human monitoring, algorithmic audits, and transparency in automated communication.

3. *São Paulo Municipal Secretariat of Finance, Brazil*

At the subnational level, the São Paulo Municipal Secretariat of Finance adopted an AI-driven audit platform in 2019 capable of real-time anomaly detection. The system analyses digital invoices and financial transactions, reducing manual inspection workload by 40% and increasing detection of tax irregularities by 28%. These results reflect the operational potential of AI in local governments but also highlight limitations related to digital literacy among staff and the cost of system maintenance.

4. *Comparative Synthesis*

All three cases illustrate that AI significantly improves efficiency, transparency, and predictive capacity. Yet, they also confirm that technological advancement must be accompanied by adequate institutional governance. Singapore demonstrates best practices in ethical supervision, while RFB and São Paulo Municipal Secretariat of Finance show substantial progress but continue to face challenges in harmonizing legal frameworks and data governance.

c) Thematic Discussion and Interpretation

The results reaffirm the arguments advanced in the literature (Zilveti, 2019; OECD, 2023) that AI in taxation represents a strategic shift toward evidence-based fiscal governance. The technology's impact extends beyond automation, enabling more intelligent resource allocation, enhanced fraud detection, and improved citizen interaction.

However, the findings also corroborate concerns identified by De Sousa and De Siqueira (2020) and Lietz (2021):

- *Ethical and Legal Risks:* Persist when algorithmic decision-making lacks transparency or accountability mechanisms.
- *Institutional Readiness:* Remains uneven, with varying degrees of technological capacity and regulatory maturity among countries.
- *Data Governance and Cybersecurity:* Remain critical priorities for sustaining trust in AI systems.

© 2025 Global Journals

In comparative terms, the results indicate that success in AI adoption depends on four interrelated factors:

1. *Quality and interoperability of fiscal data infrastructures;*
2. *Legal frameworks ensuring privacy and algorithmic transparency;*
3. *Institutional capacity for AI supervision and continuous improvement;*
4. *Ethical accountability embedded in administrative culture.*

These findings suggest that the mere introduction of technology does not guarantee digital transformation. Instead, effective AI integration requires governance mechanisms capable of balancing innovation, compliance, and citizen trust.

d) Conceptual Model: The AI-Driven Tax Governance Framework

Drawing on the findings and comparative evidence, derived from the literature review and international case analysis, this study proposes the AI-Driven Tax Governance Framework, as shown in table 1. A conceptual model outlining how AI can be responsibly integrated into tax administration. The framework consists of four interconnected dimensions:

Table 1: The AI-Driven Tax Governance Framework

Dimension	Description	Key Expected Outcomes
Technological Infrastructure	Adoption of secure, interoperable, and data-driven systems capable of predictive analytics.	Increased efficiency and real-time risk detection.
Legal and Ethical Compliance	Alignment of AI practices with legal norms, data protection, and algorithmic transparency principles.	Fairness, accountability, and public legitimacy.
Institutional Capacity	Development of digital competencies, training, and oversight mechanisms.	Improved decision quality and adaptive governance.
Citizen-Centric Governance	Inclusion of feedback channels, explainability, and public awareness of AI tools.	Strengthened trust, transparency, and inclusiveness.

Source: Adapted by the author (2025).

This conceptual model outlines how AI can be responsibly embedded in tax systems and it integrates technological, legal, and ethical perspectives and reflects the balanced approach recommended by the OECD (2023) and the European Parliament (2021) for sustainable digital transformation in public finance.

The findings confirm that AI has the potential to redefine fiscal governance by enhancing transparency, efficiency, and predictive control. However, these gains can only be sustained through robust ethical and legal safeguards, continuous institutional adaptation, and citizen engagement. The proposed AI-Driven Tax Governance Framework offers a holistic reference for governments seeking to modernise their tax systems while ensuring accountability and public trust.

V. Conclusions and Recommendations

a) Conclusions

This study examined how Artificial Intelligence (AI) is reshaping the landscape of tax administration and fiscal governance, drawing upon an extensive literature review and comparative case analysis. The findings demonstrate that AI represents both a transformative opportunity and a governance challenge for modern public finance systems.

At the conceptual level, AI enables automation of complex fiscal processes, enhances predictive auditing, and strengthens data-driven decision-making. Countries including *Brazil, Singapore, and Estonia* exemplify how AI can improve efficiency, reduce fraud, and foster transparency in tax administration. However, successful adoption depends on *institutional maturity, ethical safeguards, and legal adaptability* - factors repeatedly highlighted across the literature and confirmed by comparative experiences.

Key Conclusions Include:

1. *Technological Innovation:* Alone is insufficient; it must be supported by clear governance structures and ethical accountability mechanisms.
2. *Data Quality and Interoperability:* Remain decisive for AI's effectiveness in risk detection and fiscal forecasting.
3. *Legal and Ethical Frameworks:* Are necessary to ensure algorithmic transparency, fairness, and protection of taxpayer rights.
4. *Institutional Capacity Building:* Including staff training, technical infrastructure, and human oversight - is essential to sustain long-term impact.
5. *Citizen Trust:* Is the cornerstone of digital transformation in taxation; without transparency and explainability, technological gains may be undermined by public resistance. This finding aligns with evidence from Singapore´s "Ask Jamie" initiative and OECD (2023), which highlight public transparency as key to citizen compliance.

The proposed *AI-Driven Tax Governance Framework* offers an integrative model to guide the

© 2025 Global Journals

responsible adoption of AI in tax systems, combining technological efficiency with ethical and institutional oversight. This framework is particularly relevant for emerging economies, where modernization public finance must align innovation with social accountability and effective data governance.

b) Recommendations

Based on the findings and conceptual synthesis, several recommendations are proposed:

1. *For Policymakers and Governments*

- Establish *national AI governance strategies for public finance* that define ethical, legal, and technical standards.
- Integrate *data protection and cybersecurity laws* with fiscal-administration reforms to ensure privacy and prevent misuse of taxpayer information.
- Promote *regional cooperation* (e.g., through the African Tax Administration Forum - ATAF) to share experiences and best practices in digital taxation.
- Encourage *investment in infrastructure and interoperability*, including cloud-based systems and standardised fiscal data exchange protocols.

2. *For Tax Administrations*

- Adopt *AI systems incrementally*, prioritising pilot projects that allow risk assessment and stakeholder feedback before full deployment.
- Create *multidisciplinary governance units* combining IT, legal, and audit professionals to oversee algorithmic systems.
- Develop continuous *capacity-building programs* to equip staff with digital and ethical competencies necessary for AI oversight.
- Implement *transparency dashboards* to communicate AI-generated results and maintain citizen trust in automated fiscal operations.

3. *For Academic and Technical Research*

- Expand empirical research on *AI ethics, bias mitigation, and fairness in public decision-making*, particularly in fiscal contexts.
- Develop *quantitative models* to measure AI's real impact on revenue efficiency, compliance levels, and administrative costs.
- Conduct *comparative studies* across African and Lusophone countries to identify contextual barriers and scalability factors in AI adoption.
- Encourage interdisciplinary collaboration between *communication sciences, economics, and data analytics* to strengthen public understanding of AI in governance.

c) Limitations of the Study

While this research provides a structured conceptual and analytical framework, several limitations should be acknowledged. The analysis is based *on 40 documents and three international case studies* although diverse, may not capture all regional variations in fiscal digitalization. Moreover, the *qualitative and exploratory design* prioritizes interpretative depth over statistical generalization. Future quantitative validation could therefore enhance the robustness of the proposed framework.

d) Future Research Directions

Building on this Foundation, Future Research should Aim to:

- Empirically test the AI-Driven Tax Governance Framework across diverse administrative contexts.
- Investigate AI bias detection and mitigation mechanisms within fiscal algorithms.
- Explore the interaction between digital communication, transparency, and taxpayer behaviour in AI-based systems.
- Conduct longitudinal studies to evaluate how AI adoption evolves in relation to institutional capacity and regulatory adaptation.

e) Final Reflection

The digital transformation of tax administration represents not merely a technological upgrade but a structural evolution in the way states manage, regulate, and communicate with citizens. AI has the potential to make tax systems more efficient, transparent, and inclusive, yet its implementation must remain guided by the principles of responsibility, fairness, and accountability.

For countries including Mozambique, where fiscal modernisation is closely tied to national development goals, adopting AI requires a phased, institutionally anchored approach: one that aligns innovation with ethical governance and citizen empowerment. Only through such balance can digital technologies truly contribute to sustainable, transparent, and trustworthy fiscal systems.

AI offers an unparalleled opportunity to modernise tax systems, but its long-term success depends on sound governance, institutional capacity, and ethical responsibility. The AI-Driven Tax Governance Framework model provides a foundation for guiding that transition, ensuring that the future of digital taxation is both intelligent and just.

Conflict of Interest and Funding Declaration

The author declares no conflict of interest and no external funding was received for this research.

References Références Referencias

1. Almeida, D. C. (2021). A inteligência artificial aplicada à tributação: Desafios e perspectivas jurídicas. *Revista Brasileira de Direito Tributário, 27* (3), 45–62.

© 2025 Global Journals

2. Alves, C. A. (2022). Ética e responsabilidade na automação de decisões fiscais. *Revista de Administração Pública, 56* (4), 211–229.
3. Baccarin, P., Teixeira, D., & Amaral, L. (2019). Inteligência artificial na gestão tributária: Análise de casos e tendências emergentes. *Revista Gestão e Desenvolvimento, 6* (1), 112–126.
4. Bardin, L. (2016). *Análise de conteúdo*. Lisboa: Edições 70.
5. Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). Thousand Oaks, CA: Sage Publications.
6. Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). ThousandOaks, CA: Sage Publications.
7. De Sousa, M. F., & De Siqueira, J. P. (2020). Desafios da aplicação da inteligência artificial no sistema tributário brasileiro. *Revista Direito Digital e Sociedade*, 8(1), 101–119.
8. Dornelas, A., Campos, L., & Figueiredo, K. (2022). LSTM Artificial Neural Network Models for Tax Forecasting. In *Proceedings of the 19th National Meeting on Artificial and Computational Intelligence*, (pp. 95-105). Porto Alegre: SBC. https://doi.org/10.5753/eniac.2022.227595.
9. Engelmann, F., Lietz, M., &Dahlem, M. (2020). Algorithmic accountability and transparency in tax administration. *Computers & Law Review, 36*(4), 223–240. https://doi.org/10.1016/j.clr.2020.223240.
10. European Commission. (2021). *Ethics guidelines for trustworthy AI*. Brussels: Publications Office of the European Union. https://digital-strategy.ec.europa.eu.
11. European Parliament. (2021). *Report on artificial intelligence in the digital age*. Brussels: European Parliamentary Research Service. https://www.europarl.europa.eu.
12. *Gao, L., He, H., & Zhang, D. (2020). Taxation in the Age of Artificial Intelligence: Opportunities, Challenges and Governance*. Frontiers in Robotics and AI, 7, 71.
13. Guevara, M. (2019). *AskJamie: Conversational AI for public service innovation in Singapore*. Government Technology Agency (GovTech) Singapore. https://www.tech.gov.sg.
14. HM Revenue & Customs (HMRC). (2021).*HMRC's Connect System: Data integration for compliance and fraud detection*. London: HMRC. https://www.gov.uk/government/publications.
15. International Monetary Fund (IMF). (2024). Understanding Artificial Intelligence in Tax and Customs Administration.*IMF Technical Note and Manual*, Washington, D.C. https://doi.org/10.50 89/9798400290435.005
16. Ippolito, F., Manzoni, G., &Zambon, S. (2020).*Tax Crime Prediction with Machine Learning: Evidence from Brazil.Journal of Data Science and Policy*, *8*(2), 45–62.
17. Kitchenham, B. (2021). *Systematic literature reviews in software and information systems research: A methodology guide*. Springer.
18. Lietz, M. (2021). Bias and fairness in AI-based decision-making for taxation. *International Review of Administrative Sciences, 87* (2), 392–410.
19. Manikandan, G., & Maheswaran, R. (2019). Artificial intelligence in public-sector transparency: A case for tax administration. *International Journal of Public Sector Management, 32* (6), 501–518.
20. Munir, H., & Setiawan, M. (2020). Strengthening tax compliance through intelligent automation: Evidence from emerging economies. *Asian Journal of Public Policy and Administration, 3* (2), 72–89.
21. OECD. (2022). *AI principles for public sector governance*. Paris: Organisation for Economic Co-operation and Development. https://www.oecd.org.
22. OECD. (2023). *AI for tax administration: Opportunities and challenges*. Paris: Organisation for Economic Co-operation and Development. https://www.oecd.org.
23. Oliveira, S. A. D. S. (2022). *Taxation of artificial intelligence by its use and the implications for tax administration in validating its acts*. Revista da Escola Superior de Advocacia de Rondônia – RO. https://oab-ro.org.br/SIMONE-ALMEIDA-DOS-SANTOS-OLIVEIRA.pdf
24. Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., ... Moher, D. (2021).The PRISMA 2020 statement: An updated guideline for reporting systematic reviews.*BMJ, 372*, n71. https://doi.org/10.1136/bmj.n71.
25. Resnik, D. B. (2018).*The ethics of research: An introduction.* New York: Routledge.
26. Rodrigues, L., & Gouveia, E. (2020). Redes neurais e automatização da análise tributária: O novo paradigma digital. *Revista Portuguesa de Gestão e Finanças, 35* (1), 55–69.
27. Rossi, P., & Torzilli, M. (2019). Ethical AI governance in public finance: Justice and accountability. *Ethics and Information Technology, 21*(3), 201–219.
28. Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a methodology for developing evidence - informed management knowledge by means of systematic review. British *Journal of Management, 14* (3), 207–222. https://doi.org/10.1111/1467-8551.00375.
29. University of Coimbra. (2021).*Code of ethics and conduct in research.*Coimbra: University of Coimbra, Portugal.

© 2025 Global Journals

30. Wang, L., Kim, D., & Park, S. (2021). Enhancing equity and efficiency in digital taxation through AI tools. *Journal of Public Economics and Technology, 9* (4), 310–326.
31. Xavier, J. P., Lima, R. A., & Oliveira, C. M. (2022).Identificação de evasão fiscal utilizando técnicas de aprendizagem de máquina: *Uma revisão sistemática. Revista de Administração Pública,* 56 (4), 1–18.
32. Zhou, Y., Li, J., & Chen, K. (2019). Automation and innovation in tax management: The role of artificial intelligence. *Public Finance Review, 47*(5), 827–848.
33. Zilveti, F. (2019). Automação fiscal e inteligência artificial: Um novo modelo de fiscalização tributária. *Revista Direito e Economia Digital, 3* (1), 9–28.

© 2025 Global Journals