

ARTIFICIAL INTELLIGENCE AND TAX ADMINISTRATION IN NIGERIA: OPPORTUNITIES, CHALLENGES AND IMPLICATIONS FOR TAX COMPLIANCE

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Abstract: *The integration of Artificial Intelligence (AI) in tax administration has revolutionized tax collection, compliance enforcement, and taxpayer services. In Nigeria, the Federal Inland Revenue Service (FIRS) is exploring AI's potential to enhance tax administration, improve compliance, and increase revenue generation. This paper examines AI's transformative potential in Nigeria's tax administration, contributing to Sustainable Development Goal (SDG) 16 by reducing illicit financial flows and strengthening domestic resource mobilization. Using a doctrinal approach, this study analyzes AI's opportunities, challenges, and implications, highlighting benefits such as improved tax compliance, taxpayer experience, and revenue generation. The study reveals that AI can enhance tax compliance through personalized services, improved audit processes, and tax evasion detection. However, concerns about taxpayer rights, transparency, and accountability in AI-driven tax administration are noted. The paper recommends a comprehensive AI adoption strategy, infrastructure investment, and capacity building to ensure transparent, accountable, and fair tax administration.*

Keywords: *Artificial Intelligence, Tax Administration, Sustainable Development Goals, Tax Compliance.*

1. Introduction

Revenue generation is crucial to the success of any government as it is from this those other developments flow. It is the building of the economy of the country brick by brick. There are many means of generating revenue which include tax and Non-tax revenue. The non-tax revenue is categorized further into administrative revenues, commercial receipts and grants (Obiechina, (2010). Responsive and responsible government is interested in revenue generation since it is important for industrialization and economic growth and development. Responsible government all over the world provides development that could benefit the present and future generation (Amadi and Amadi, 2023). The government mandate to ensure development prompts the collection of tax which will aid the actualization of their mandates. The government has, through this source, seen an increase revenue generation from as the years roll. Between 2020 and 2021, we saw the internally revenue generated at the state level in Nigeria increased from #1.56 trillion to #1.90 trillion (National Bureau of Statistics, 2022).

Just as a super substitute in a football match, artificial intelligence is the game changer that has catalyzed many developments. It is the brainbox of technology as it has advanced technological developments in every sphere and made human activities a pleasure as it fasten delivery of tasks without stress. Built from data, hardware and connectivity, AI allows machines to mimic human intelligence such as perception, problem-solving, linguistic

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interaction or creativity. The invention of artificial intelligence dates back to 1956 conference in 1956 at Dartmouth College in the United States where McCarthy officially presented the model of artificial intelligence and it has since then been used in solving human problems.

Artificial intelligence has played active roles in bridging the gaps created by bottleneck bureaucracy system by helping to solve administrative problems in seconds. Despite the numerous developments that revenue generated through taxation has brought and the obvious yearly increase in revenue generation, data has shown that the government at all levels is losing out on revenue through tax evasion and avoidance. The Tax Justice Network's annual State of Tax Justice report, disclosed that of the \$553, 986,512 billion lost to global tax abuse a year, two-thirds (\$330 million) is lost to multinational corporations shifting profit offshore to underpay tax and the remaining third (\$224million) is lost to wealthy individuals hiding their wealth offshore. This huge amount has deservedly called for urgent attention as revenue meant for developments are been lost on daily basis and its reactionary implication is seen in the small pace of Nigeria development and over dependence on debt from foreign countries. Factors contributing to these losses can be subdued with the assistance of artificial intelligence. The deployment of artificial intelligence will not only helped in curbing the excesses leading to the losses, it will also hasten the pace of revenue generation and a more accurate date for accountability purpose and adequately reduce the level of noncompliance (Cantens and Trounpe, 2025).

2. The Tax Administration and Artificial Intelligence Examined

The better understanding of the concept of taxation will serve as the foundation for the administration of it. Thus, administration of tax cannot be discussed in isolation of the concept of taxation. Taxation has been introduced as one of the ways government generates finances for developmental projects and running of the affairs of a state. Tax is any contribution imposed by government upon individuals, for the use and service of the state, whether under the name of toll, tribute, tallage, gabel, impost, duty, custom, excise, subsidy, aid, supply, or other name (Black's Law Dictionary, 2009). The use of 'impose' in the definition suggests its mandatory nature. It also suggests that it is determined by the government. Hence, if the amount will be determined, there should exist, an organized body and legislations, that will regulate the perimeters for determining the amount, how it should be paid, who should collect it and punishment for noncompliance – the concept of tax administration stems from there. Tax administration involves the registration, assessment, returns, collection, compliance monitoring, compliance enforcement, sanction, taxpayer's education and awareness and any other activities that can improve the efficiency and effectiveness of the taxation (Ugochukwu, 2024).

Prior to the enactment of the Nigeria Revenue Service (Establishment) Act, 2025, the administration of tax in Nigeria has been managed by the Federal Inland Revenue Service (FIRS) for the federal government (Federal Inland Revenue Service (Establishment) Act, 2007). The FIRS also legibly provided for the functions of the service which include the controlling and administration of the different taxes and laws specified in the First Schedule of Federal Inland Revenue Service (Establishment) Act or other laws made or to be made from time to time by the National Assembly or other regulations made there under by the Government of the Federation and to account for all taxes collected. However, under the new legislation, the Federal Inland Revenue Service has been changed to Nigeria Revenue Service (NRS).

The major functions of the NRS is captured by the objectives of the Service which includes collection or recovery of assessed tax, enforcement of payment of taxes and remit tax collected into designated accounts, administer all revenues accruing to the Government,

in collaboration with the relevant Ministries and Agencies of Government, review the tax regimes and promote the use of taxation to develop, stimulate and grow economic activities, carry out examination and investigation exercises with a view to enforcing compliance with the provisions of this Act and any other tax law, make a determination of the extent of financial loss and such other losses by Government arising from tax fraud or evasion and revenue foregone arising from tax waivers and other related matters, adopt measures to identify, trace, freeze, confiscate or seize proceeds derived from tax fraud or evasion, in line with the provisions of this relevant laws, adopt measures which include compliance and regulatory actions, introduction and maintenance of investigative and control techniques on the detection and prevention of non-compliance with tax laws ,collaborate and facilitate exchange of information with relevant national or international agencies or bodies on tax matters ,establish and maintain a system for monitoring international dynamics of taxation in order to identify suspicious transactions, and the perpetrators or other persons involved, provide and maintain access to up-to-date and adequate data and information on all taxable persons, individuals, corporate bodies or all agencies of Government involved in the collection of revenue for the purpose of efficient, effective and correct tax administration and to prevent tax evasion or fraud, maintain database, statistics, records and reports on persons, organisations, proceeds, properties, documents or other items or assets relating to tax administration including matters relating to tax waivers, fraud or evasion, undertake and support research or similar measures with a view to stimulating economic development and determine the manifestation, extent, and effects of tax waivers, fraud, evasion and other matters that affect Nigeria Revenue Service (Establishment) Act, 2025 2025 No. 4 A 235 effective tax administration and make recommendations to the Government on appropriate intervention and preventive measures, collate and continually review all policies of the Government relating to taxation and revenue generation and undertake a systematic and progressive implementation of such policies, liaise with the office of the Attorney-General of the Federation, any Government security and law enforcement agency.

Such other financial supervisory institutions in the enforcement and eradication of tax related offences, issue taxpayer identification or any other equivalent identity to every relevant taxable person in collaboration with tax authorities of States or Local Governments, or the Joint Revenue Board, carry out and sustain public awareness and enlightenment campaign on the benefits of tax compliance, undertake or collaborate with any person to provide training, continuous education, research, knowledge and capacity building in taxation (Nigeria Revenue Service (Establishment) Act, 2025).

2.1 Artificial Intelligence

Technological advancement has seen to the birth of the Artificial Intelligence (AI) that is posing to make life and its activities easier for human being. AI is a field of computer science that studies how machines can imitate the intelligence of their human counterparts. Over the last decade, definitions of the term have become quite loose and refer to just about any computerized or automated function (Sarmah, 2019). Artificial intelligence is an intellect that is much smarter than the best human brain in practically every field, including computer science and linguistic logic. “It is a modern method of machines which will do muscle work and illustrate complex questions in a “intellectual” manner. It is concerned with the basic and most important aspects in our life i.e. philosophy, computer science, mathematics, linguistics, biology, neuron science, sociology etc.

AI plays a very important role to exhibit intelligent behaviour, to learn, demonstrate and give advice to the user. Intelligence and machine learning combined together very frequently when the concepts like big data, data science and analysis comes in mind. Machine learning is very efficient solution to handle such a big data in multinational industries. They

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actually work like a super-computer (Rupali, & Amit, 2017). AI has been impactful hasten productivity in different areas like the medicine where deep learning is prevailing type of AI. Machine learning, often used in precision medicine, assesses patients' conditions and determines the appropriate treatment procedures based on their medical backgrounds. Application of artificial intelligence, in healthcare includes healthcare drug creation, treatment design, disease progression, health monitoring managing medical data and records (Akhere, A. D., Mark, A., & Ebruke,).

Also in law, different AI applications are being deployed like, Prime GPT and PrimSol GPT; Law pavilion launched these AI tools for the Nigerian Legal system to embrace AI. The proposed Generative AI that will help in legal research and drafting which was officially unveiled at the NBA conference, 2023. The applications were developed for lawyers to leverage legal data from LawPavilion's extensive legal resources. eBrevia was developed in 2012 by two Harvard Law School Graduates. It is like an ediscovery tool, used to find out relevant texts from various long and complicated legal documents and contracts within a very short period. This extracts text from a contract using powerful machine learning and artificial intelligence, then creates a summary report of that content (Giwa, and Kodjovi, 2023). Currently, there is no formal specific law directly regulating the use of Artificial intelligence in Nigeria. However, there are laws which extend to but not directly regulate the use of Artificial in Nigeria. Some of which include, but are not limited to Cybercrimes (Prohibition, Prevention, etc.) Act 2024, the Nigeria Data Protection Act 2023, the Security and Exchange Commission (SEC) Rules in Robo-Advisory Services, the Copyright Act 2022, the Nigerian Commission Communication Act 2003, among others (Okeke, Obianyo, and Ater, 2025).

The international legal frameworks that regulates the AI include but not limited to European Union Artificial Intelligence Act, 2024, General Data Protection Regulation 2018. The national laws and regulations also include the constitution of the Federal Republic of Nigeria 1999, Nigeria Revenue Service (Establishment) Act 2025, Securities and Exchange Commission Rules on Robo-Advisory Services 2021, Draft National Artificial Intelligence strategy 2024. The institutional frameworks include the Nigeria Revenue Service, National Centre for Artificial Intelligence and Robotics, National Information Technology Development Agency (NITDA), Nigeria Data Protection Commission (Okeke, Obianyo, and Ater, 2025).

3. AI: Opportunities and Implications for Tax Compliance

The nexus between Taxation and Artificial Intelligence is the benefit the later offer than the former. Ordinary, AI poses to gain nothing but to assist human beings in their daily activities. However, by relying on the assistance provided by the AI, tax administrator has numerous opportunities to explore which will have positive implications on the tax administration. The Nigerian taxation system has been plagued by numerous challenges, including inefficiencies, non-compliance, and revenue leakages as highlighted in our preliminary remarks. However, the advent of Artificial Intelligence (AI) presents a potential solution to these challenges. AI has the potential to revolutionize tax administration in Nigeria, enhancing the efficiency and effectiveness of tax collection, and promoting economic growth and development (Bamikole, Folorunso, and Nwankwo, 2024).

Inefficiencies in tax administration also contribute to revenue leakage. The manual processes and lack of automation in tax administration can lead to errors, omissions, and delays in tax collection. AI can assist in the administration of tax by increasing tax authorities' efficiency, enhance tax payer compliance, be a driving force for innovation, aid better decision making, save cost and improve customer experience. Automating routine, repetitive tasks with AI significantly boosts efficiency. AI streamlines data processing and

offers actionable, data - driven insights. This enables tax professionals to make more informed decisions, based on up - to - date and accurate information, leading to improved overall decision - making. AI encourages innovation by enabling the development of new solutions, tools, and capabilities within tax departments. By embracing AI, companies can create more efficient systems and unlock new ways to address challenges in tax management. AI - powered tools, such as chatbots and virtual assistants, offer more personalized and responsive service to taxpayers and clients. This enhances customer experience by providing timely assistance and making tax - related processes more accessible. AI - driven automation boosts productivity, reduces the need for manual labor, and minimizes the need for outsourcing. These efficiency gains lead to cost savings, which positively impact the bottom line and contribute to higher profitability (Goyal, (2025).

AI improves the accuracy of tax processes, ensuring better adherence to regulations. By automating tasks, AI reduces the risk of human errors and ensures more consistent compliance with complex tax laws. There are many technologies and applications that are AI driven that effective for tax administration. Machine learning (ML) and predictive analytics are two of the most common AI technologies in the tax administration. By exploring large datasets and identifying patterns, these technologies enable tax officers and businesses to increase tax compliance, enhance reporting processes, and forecast future tax-related behavior. Machine learning algorithms can automate tax compliance by analyzing tax returns, business transactions, and financial data in real-time.

By identifying discrepancies or patterns that may indicate non-compliance or fraud, these systems allow tax authorities to proactively flag suspicious activities. The use of ML helps reduce human error, streamline audits, and ensure more accurate tax assessments. Predictive analytics plays a critical role in identifying potential tax fraud. This proactive approach not only helps detect fraud more quickly but also improves the allocation of audit resources, ensuring that the most high-risk cases are prioritized. Another key application of machine learning in tax systems is the analysis of taxpayer behavior. By examining past tax filings, payment patterns, and interactions with tax authorities, AI systems can generate insights into a taxpayer's likelihood to comply with tax obligations. These insights help authorities assess risk, target high-risk taxpayers, and optimize enforcement strategies. Predictive models can even suggest personalized compliance strategies for taxpayers, potentially reducing the need for intervention. For businesses, machine learning can be used to forecast potential tax liabilities based on trends and patterns, enabling more accurate planning and budgeting. This application is especially useful for businesses operating in multiple jurisdictions, where tax laws can vary significantly.

Natural Language Processing (NLP) is another crucial AI technology being applied in tax systems. NLP enables computers to understand and process human language, making it an invaluable tool for interpreting complex tax laws and regulations. Chatbots can guide taxpayers through the process of filing returns, explain tax law provisions, and even suggest personalized tax-saving strategies. Additionally, chatbots can operate 24/7, providing round-the-clock assistance and significantly enhancing taxpayer experience. This is particularly beneficial in the era of online and remote tax filing, where face-to-face interactions with tax professionals are less common.

NLP is also used to automate tax research and keep tax authorities, businesses, and professionals up-to-date with the latest regulatory changes. AI systems can scan vast amounts of tax literature, including laws, case rulings, and regulatory announcements, to extract relevant information. This process helps identify updates to tax codes or new interpretations of tax regulations, making it easier for tax professionals to stay informed and ensure compliance with the latest requirements. For businesses, this automation reduces the time spent on tax research and enables faster adaptation to changes in tax laws. With AI-powered

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research tools, businesses can access updated tax information almost instantaneously, improving decision making and ensuring that tax strategies remain compliant with evolving legal frameworks. Robotic Process Automation (RPA) is a technology that uses software robots to automate repetitive and rule-based tasks. In tax administration, RPA is revolutionizing many processes by replacing manual interventions with automated workflows that are faster and less prone to error.

RPA can be applied to streamline the tax return processing system. Software robots can automatically retrieve, validate, and categorize data from incoming tax returns, reducing the time spent by tax authorities on manual data entry and verification. Block chain technology, known for its decentralized and secure nature, is also making its way into tax systems. By ensuring the immutability of records and enhancing transparency, block chain offers a new avenue for improving tax compliance and reducing fraud. Smart contracts, powered by block chain, are transforming tax reporting and payment systems. These self-executing contracts automatically trigger tax payments when specific conditions are met, ensuring that taxes are paid promptly and accurately. Block chain's transparency also allows for real-time tracking of transactions, making it easier for both tax authorities and businesses to verify tax payments. Smart contracts can also automate the process of tax filing, ensuring that the correct amounts are reported and paid based on pre-established rules. This reduces human error and enhances compliance by removing manual intervention from the process (Ezeife, Kokogho, Odio, and Adeyanju, 2021).

The big accounting firms are taking strategic actions to adopt artificial intelligence in tax administration. PricewaterhouseCoopers (PwC), Deloitte, and KPMG are leading the way to adopt artificial intelligence in tax. PwC has proposed an integrated model that gathers finance and tax data from multiple sources and spreadsheets onto a common platform. This reduces the time needed to collect and assemble data manually, provides more clarity regarding the data, and reduces the data manipulation that can occur when traditional spreadsheets are used. PwC has also proposed a model for a future tax ecosystem that enhances productivity, improves data quality, and reduces risk by maintaining the flow of information among tax, finance, and third parties. KPMG has introduced a new Technology Enabled Compliance Solution for Tax, known as the KPMG solution. This is a fully automated tax process that allows corporations in the PRC to manage their tax obligations. In the PRC tax system, the policy is complex and changes frequently.

The manual tax process is time consuming, and traditional ways of fling taxes can give rise to diverse risks. Artificial intelligence helps tax auditors monitor the tax collection process and reduces the risk of tax fraud and evasion. It also increases the efficiency of tax collection and increases government revenue. In addition, Deloitte United States has developed a supervised machine learning tool that can extract clauses in contracts, using natural language processing and machine learning tools. This helps reduce bias and fraud in tax administration. As tax fraud is one of the most significant issues faced by many countries, causing billions of dollars in losses every year, the tax authorities of affected countries are continuously trying to detect it. Spain is one of the developed countries most profoundly affected by tax fraud, which exceeds 20% of Spain's total gross domestic. As tax is crucial for a country's economy, detecting tax fraud is a vital goal of tax authorities.

Many countries in Asia and the Pacific are introducing artificial intelligence in tax administration to lessen costs and prevent tax evasion. Artificial intelligence helps tax authorities detect fraud and efficiently analyze tax reporting. Machine learning tools, such as multilayer perceptron neural networks, support vector machines, and logistic regressions with harmony search using optimization algorithms, are the most efficient estimates of fraud detection. Tax authorities should develop a strong artificial intelligence base and implement

the most relevant artificial intelligence and machine learning tools to detect tax fraud and evasion (Shakil, & Tasnia, 2022).

ML facilitates real-time updates to the classification schemes. Economic activities are dynamic and usually change due to market trends, changes in regulations, or changes in the circumstances of the taxpayer. Through constant monitoring of financial transactions and other related data, machine learning models can identify changes in behavior that may indicate a change in the business activity of the taxpayer. For example, a company transitioning from retail to an e-commerce business may undergo changes in transaction types, customer demographics, or supply chain behaviors-all of which can be captured by adaptive ML systems. These enable the tax authorities to proactively update their classification and avoid inaccuracies arising from fixed or stale approaches. Machine learning can drive virtual assistance systems that provide personalized advice to taxpayers. The systems are mostly deployed either as chatbots or interactive helpdesk portals using predictive algorithms in order to offer suggestions with respect to deductible expenses, given the profile of the taxpayer.

For instance, a taxpayer with considerable educational expenses may receive recommendations for either tuition tax credits or corresponding deductions. This level of guidance from ML systems limits the confusion of taxpayers while working their way through often-complicated tax codes. Moreover, these virtual proposals can be made to change dynamically with any change in the circumstances of the taxpayer. For example, if a taxpayer suddenly experiences a change in income, unexpected medical expenses, or assumes caregiving responsibilities, then machine learning models can change their predictions and provide updated recommendations. This adaptability not only makes sure that regulations are complied with but also enhances the perceived value of tax services (Rahman, Khan and Sirazy, 2024).

One of the significant challenges facing Nigeria's taxation system is revenue leakage. This occurs when taxes owed to the government are not collected, resulting in a loss of revenue. Several factors contribute to revenue leakage, including tax evasion, tax avoidance, and inefficiencies in tax administration.¹³ Artificial intelligence (AI) can play a crucial role in curbing revenue leakage in Nigeria's taxation system. AI-powered systems can analyse large amounts of data to identify patterns and anomalies, helping to detect tax evasion and avoidance. Additionally, AI can help automate tax administration processes, reducing errors and inefficiencies. Tax evasion is a major source of revenue leakage in Nigeria. Taxpayers may evade taxes by underreporting income, over claiming deductions, or failing to file tax returns.

According to a report by the Federal Inland Revenue Service (FIRS), tax evasion is estimated to cost Nigeria over N5 trillion annually. Tax avoidance is another source of revenue leakage. Taxpayers may exploit loopholes in tax laws or use aggressive tax planning strategies to minimize tax liabilities. This can result in significant revenue loss for the government. Inefficiencies in tax administration also contribute to revenue leakage. The manual processes and lack of automation in tax administration can lead to errors, omissions, and delays in tax collection. Artificial Intelligence (AI) can help curb revenue leakage in the Nigerian taxation system. AI-powered systems can analyze large amounts of data to identify patterns and anomalies that may indicate tax evasion or avoidance. AI can also help automate tax administration processes, reducing errors and inefficiencies. Furthermore, AI-powered chatbots can provide taxpayer support and education, improving tax compliance. In addition, AI can help identify and address tax avoidance schemes, such as transfer pricing and profit shifting. AI can also help optimize tax collection, identifying the most effective strategies for collecting taxes and reducing revenue loss (Bamikole, Folorunso and Nwankwo, 2024).

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The resultant effects of the automation of the administration of tax in Nigeria will see to the reduction of the challenges facing the tax compliance in Nigeria. The monitoring of the tax payers, assessment of tax due to them, computation of necessary data, correspondences etc. will be easier for the tax authorities and the loss of revenue will be deliberately tackled and reduced. The new Nigeria Tax Act and the Nigeria Revenue Service (Establishment) Act envisage some objectives which will help the administration of tax in Nigeria and they will be considered succulently to marry the promises of AI with that of the laws and regulations objectives for desire result. . Nigeria has made progress in digitizing its tax system through initiatives such as the Integrated Tax Administration System (ITAS) and e-filing platforms for tax returns.

AI applications could be deployed in tax monitoring systems to predict non-compliant behavior and automate the flagging of suspicious transactions. Digital platforms like electronic payment systems and tax registration portals enhance compliance when combined with user training. AI improves accuracy and automation, its effectiveness in tax compliance relies heavily on users' digital literacy. Audit probability significantly influences compliance decisions, while the severity of penalties had limited effect. Thus, AI could enhance audit selection efficiency, making audit threats more credible and targeted.

More so, trust in government and religiosity positively influence tax compliance, while factors like culture and educational attainment had insignificant effects. AI tools can be deployed for maximum impact, particularly in low-trust societies like Nigeria. Inadequate tax knowledge and poor education levels are barriers to compliance in Nigeria. Therefore, effective implementation of AI-powered systems must be accompanied by targeted digital literacy programs and public education. It will help to detect fraud and non-compliance will be exposed (Onyekachi and Ihendinihu, 2025).

The AI has been seen to be an important innovation in the administration of tax to ensure compliance in Nigeria. However, like every other innovations, AI is facings many challenges in its efforts to ease the human of his stress. Conversely, the challenges range from data protection , knowledge gap, human factor, lack of political will, absence of comprehensive AI Legal framework, liability of AI systems, Data protection and privacy regulation, limitation of applicable regulatory frameworks, and limited AI expertise and institutional capacity (Okeke, Obianyo, and Ater, 2025). Data abuse practices, AI technology can be used in creating very convincing but fake content like videos and images that will look as good as the original to spread misinformation or even manipulate public opinion, such can also be a sophisticated ready tool for phishing. Data Collection and use by AI Technology like the various generative AI tools, especially ChatGPT, Stable Diffusion, or other tools being developed, which allow people's data such as articles, images, and videos, to be used, without their consent is a thing of serious worry. The risk of sharing personal information with sites like Google location tracker can compromise human securityusers' data without consent and authorization amounts to breach, invasion, or intrusion into the privacy of persons which violates their rights (Dashe, & Asada, 2023). The process of artificial intelligence application and taxation system needs to collect and analyze the basic data and economic behaviors of different groups of enterprises and individuals, which may cause leakage of public data information. The application of current big data technology can quickly calculate and analyze personal preferences and push relevant information by analyzing people's clickthrough rate. Artificial intelligence technology relies on big data support to identify, match, and predict data to achieve accurate tax payment services. As more and more data is collected, the privacy of personal information cannot be guaranteed, and the risk of information disclosure increases.

The literacy level in Nigeria has adversely affected the use of AI which could have been deployed to aid effective administration of the tax regime. While we have a reasonable

number of educated citizens, we uninterestingly have an educated population that is terribly technologically illiterate. This has discourage the use of AI has it will affect collection of tax in rural places and the necessary relationship that ought to be built between tax authorities and tax payers will be affected due to the knowledge gap, especially with the new old generation. Factors such as educational level influenced the adoption of AI tools, highlighting various challenges in integration. Study indicated that the University of Ibadan, Nigeria lecturers exhibit a lack of understanding and unease with technology as the major barrier in their use of artificial intelligence. A study also revealed that college professors face challenges in integrating artificial intelligence into their teaching style which would result in a shift from their traditional style of teaching, also balancing the use of artificial intelligence to avoid overuse is another challenge faced by professors according to a study (Ogochukwu, Emiri, Ijiekhuamhen and Nwankwo (2024).

It is therefore recommended that tax authorities should enhance data management, upgrade technological infrastructure, strengthen cyber security measures, invest in human capital, establish regulatory frameworks and implement change management strategies to ensure the smooth running of an automated tax system.

4. Conclusion and Recommendations

Smart taxation has become an important development trend for tax collection and management in the future. We must face up to the changes brought by artificial intelligence technology to tax management, constantly explore technology, continuously develop application areas, and apply intelligent technology to more taxation services and tax management (Lingyan, 2019). The implementation of AI in taxation will not only increase revenue generation but also promote transparency and accountability. With AI, tax authorities can track and analyze tax expenditures, identify areas of abuse, and optimize tax collection processes. Furthermore, AI can help automate tax compliance processes, reducing errors and inconsistencies, and enabling authorities to focus on high-value tasks. Nigeria's path to improved revenue generation and transparency through AI is clear. By embracing AI technologies and fostering collaboration between government, industry, and academia, the country can unlock the full potential of AI in taxation. As Nigeria continues to navigate the challenges of taxation, AI will play a vital role in shaping a more efficient, transparent, and revenue-rich future.

Importantly, The SDGs recognize, among other things, that ending poverty must go hand in hand with strategies that improve health and education, reduce inequality, and spur economic growth. These objectives all require funds from different sources – tax being one of the most sustainable. The SDGs and Africa's development Agenda 2063 both view tax as a key enabler of their attainment. Robust tax policy and its effective administration will therefore determine the success of both agendas (Baine, 2023). To achieve this goal, innovations, such as AI should be encouraged. If used correctly, artificial intelligence has the potential to eliminate human error, make certain services faster and more accessible, and advance global progress towards the Sustainable Development Goals. Artificial intelligence might be particularly useful in the SGDs of economic growth. The potential for economic growth in the upcoming years is huge. AI could double annual global economic growth rates by increasing labour productivity and innovation such as automation of the taxing system (Abbey, 2024).

- **Enhance Data Management:** A concerted effort to improve data collection processes, ensure regular updates, and implement rigorous data validation protocols is essential. This can be achieved through prioritizing the improvement of data quality and accuracy, implementing standardized data collection methods, regular data audits, and validation processes to ensure the reliability of information. Enhancing data

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management processes through the above would enable effective tax compliance monitoring and identification of tax evasion patterns.

- **Advance Technological Structure:** Developing a comprehensive IT infrastructure investment plan, possibly in partnership with private sector stakeholders and international organizations, can help bridge the existing gaps and pave the way for effective AI deployment in tax administration. This includes enhancing internet connectivity, ensuring a reliable power supply, and upgrading current computing facilities. Improved infrastructure will support advanced data analytics and real-time processing, which are vital for efficient tax management and service delivery.
- **Reinforce Cyber security Dealings:** Implementing advanced and robust cyber security measures to protect sensitive taxpayer data, including encryption, multi-factor authentication, and regular security audits, is imperative. Additionally, establishing rapid response teams to address potential breaches and conducting continuous monitoring can help mitigate risks. Ensuring data security is critical for maintaining public trust and safeguarding the integrity of AI systems. Strong cyber security measures will prevent unauthorized access, data breaches, and cyber-attacks, thereby preserving the confidentiality and integrity of taxpayer information.
- **Finance in Human Capital Development:** Government must invest in education and training programs focused on AI and data science. Partnerships with academic institutions, industry experts, and international organizations can help develop specialized curricula and certification programs tailored to the needs of tax administrators and taxpayers. Continuous professional development is also essential for maintaining a proficient workforce that can adapt to evolving AI technologies.
- **Institute Regulatory Frameworks:** Developing comprehensive and robust regulations that guide and govern the ethical use of AI in tax administration will prevent misuse, ensure transparency, prevent biases, and protect taxpayers' privacy. Amendment of the relevant tax statutes to recognize and include AI as a vital facility to be utilized in tax administration (Nwuzor, 2025).
- **Implement Change Management Policies:** Develop and implement effective change management strategies by constantly engaging all relevant stakeholders in transparent communication and open dialogue, demonstrating the benefits of the AI solutions in qualitative and quantitative terms, and providing support throughout the transition process. Building a culture that embraces innovation and continuous improvement is also crucial for the successful adoption of AI. An effective change management strategy will facilitate the acceptance of AI technologies and encourage collaboration among tax officials and taxpayer.
- **Expedite Integration with Existing Systems:** To ensure seamless integration of AI systems with existing tax administration processes and technologies, it is important to carry out thorough assessments of current workflows, identify areas for improvement, and implement necessary modifications. It is imperative to partner with other agencies such as the Nigerian Communications Commission, National Orientation Agency, telcos, media stations and even promoters to further the narrative and entrench a system to deepen the use of AI in taxation.

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