



ASSESSMENT OF EMPLOYEES' PERCEPTION OF ARTIFICIAL INTELLIGENCE TECHNOLOGIES IN TAX ADMINISTRATION: EVIDENCE OF THE EDO STATE INTERNAL REVENUE SERVICE (EIRS) IN NIGERIA

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Abstract

This study investigates the perception of employees on Artificial Intelligence (AI) technologies in Taxation administrative using Edo State Internal Revenue Service (EIRS) as a case study. The objectives of the study were to measure employees feedback with regard to their familiarity with AI tools, level of perception towards usefulness of AI technologies, intention to use such systems in future, turnaround difficulties which may hinder adoption and correlation existed between use of these technologies and operational efficaciousness. The design of the research is survey, and data were collected using structured questionnaire from 178 employees who, through stratified random sampling. Data analysis was done using descriptive statistics, regression analysis, and Pearson Product Moment Correlation with the help of SPSS version 25. The regression results showed that employee's knowledge, attitude towards its perceived usefulness and willingness to adopt AI technologies have a positive impact on operational efficiency but challenges in the adoption of AI negatively influence the operational efficiency. Employees showed significantly high knowledge about AI technologies and generally perceive AI systems as beneficial tools in enhancing operational efficiency, revenue collection, tax compliance monitoring, and service delivery. The study also found the employees are ready to adapt despite several challenges like poor infrastructure, substandard training of workforce, bad internet connectivity, resistance to change, and anxiety of job loss due to AI-based systems. As the report concludes, the success of implementing AI technologies within tax administration agencies is highly dependent upon employee's valuation and organizational supporting technology readiness. The study suggests that more investment in technological infrastructure, employee preparedness, and organizational support systems will improve the effectiveness of AI adoption among tax administration agencies.

Keywords: artificial intelligence, tax administration, employees' perception, operational efficiency, technology adoption

1. Introduction

Around the world AI technologies have been rapidly advancing, changing organizational processes, administrative systems and public sector operations. Artificial Intelligence is the intelligence exhibited by computer-based systems that are capable of performing tasks that would require human intelligence to accomplish, such as reasoning,

learning, problem-solving, prediction and decision-making in highly programmed environments (Russell & Norvig 2021).

Machine learning, robotic process automation (RPA), predictive analytics, expert system and natural language processing are among the familiar AI technologies being integrated into operations of all organizations to make their work more efficient, productive and fast in delivering services. In recent years, governments and public institutions worldwide have increasingly started to adopt artificial intelligence technologies into their digital transformation efforts with the potential for better governance, transparency, accountability and efficiency.

Artificial intelligence technologies have been deployed in tax administration to automate processes for efficiency and with those processes being aimed at accomplishing tax assessment, taxpayer profiling, helping fraud detection mechanisms, compliance monitoring and assist efficient revenue generation processes (Organization for Economic Co-operation and Development [OECD], 2021). AI has been shown to be particularly relevant for tax administration systems because of the sheer volume of data that authorities process over individual taxpayers, which necessitates the need for intelligent systems to analyze and manage them most effectively.

Studies reveal that in public institutions AI technologies significantly boost organizational efficiency and decision making. As stated by Wirtz et al. (2019), many of the AI applications and impact in public administration enhance transparency, streamline operational bottlenecks while improving service delivery efficiency. Similarly, Dwivedi et al. (2021) observed that AI technologies bring increased productivity, innovation and administrative efficiency in public and private sector organizations.

The growing demand for improved internally-generated revenues while reducing over-reliance on oil revenue in Nigeria has increased the direction of governments toward digitized tax administration systems. Tax authorities- like the Federal Inland Revenue Service (FIRS) and different State Internal Revenue Services, for example, have received digital tax administration platforms and digital income control systems that target contributing to a great tax compliance as well as effectiveness in collections. EIRS also introduced critical digital-based solutions targeted at optimizing their taxpayer registration processes, digitizing tax payment processing and revenue monitoring activities.

While AI is being extensively integrated into tax administration systems, successful implementation of such systems depends greatly on the perception and acceptance of these tools by employees and their preparedness to use them in an appropriate manner. Since employees interact with technological systems during operational processes, they are at the center of organizational technological transformation. Positive attitude of employees towards AI technology may increase efficiency in organizations, while negative one can result in strong opposition, reduced use, and implementation failure.

Studies on this topic show that employees perceive AI technologies through various lenses shaped by their own level of technological competence, organizational support for automating work backed by formal structures and processes, perceived usefulness, ease of use, or fear of losing one job (Makarius et al., 2020). While some workers view AI systems as productivity-enhancement tools and work-process facilitators, others see them as alternatives to job roles or a challenge to their relevance in the workplace.

Similarly, when it comes to the public sector within a developing economy, there can be other challenges too because of poor technological infrastructural support with

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inadequate training and technical support coupled with employees' resistive behavior toward change that might influence their acceptance toward AI technologies (Ezeani & Oladele, 2023). Although, there are number of research conducted in the context of AI adoption and digital transformation, few papers have empirically investigated employees' perception towards AI technologies within a tax administration domain especially at state level in Nigeria.

The study investigates employees' perception of Artificial Intelligence technologies in tax administration agencies (Edo State Internal Revenue Service (EIRS) as a case study) in Nigeria. In particular, the study aims to investigate employees' awareness with respect to AI technologies, evaluate employees' perception of the usefulness of such systems, measure employees' readiness to adopt AI technologies, analyze challenges which might hinder using AI in organizations and lastly examine the interrelationship between these strategic opportunities (AI technologies) and operational efficiency.

2. Literature Review and Hypothesis Development

Artificial intelligence (AI) is one of the most revolutionary technological innovations impacting organizational performance and public administration around the world. According to Dwivedi et al. (2021), AI is defined as intelligent systems that are able to perform human cognitive functions — reasoning, learning, prediction and problem solving (Bhimani et al., 2021). Many organizations use AI technologies to automate their operational activities, increase productivity, and assist in strategic decision-making processes. AI technologies help in automating taxpayer registration, tax assessment, fraud detection and compliance monitoring processes for revenue forecasting activities by tax authorities.

According to Sun and Medaglia (2019), AI technologies play a crucial role in enhancing organizational efficiency and service delivery of public administration. In a similar manner, Kokina and Davenport (2017) state that AI-based systems enhance both the efficiency and efficacy of auditing activities and financial analysis executions. Davis (1989) proposed a Technology Acceptance Model (TAM) that forms the theoretical foundation for gaining an understanding of employees' acceptance to AI technologies. This model hypothesizes that perceived ease of use and convenience significantly affect users' willingness to adopt technological systems.

The adoption of AI technologies by employees is high when they find them useful, advantageous and easy-to-use. Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh et. al (2003) goes on to elaborate that performance expectancy, effort expectancy, social influence, and facilitating conditions predetermine employees' technology adoption behaviour. These theories are relevant and particularly important in explaining how employees perceive and accept AI technologies in tax administration agencies.

Several empirical studies have demonstrated that employees' perception plays a crucial role in the successful implementation of any AI solution in organizations. Jarrahi (2018) demonstrated that these AI technologies enhance the quality of decisions and operating efficiency if employees view the systems as supportive tools rather than threat to human-based labor. Similarly, Makarius et al. (2020) stated that employees who are trained

and also get organizational support are likely to favourable attitudes towards AI technologies.

Wirtz et al. (2019) public institution based on AI, shows increase in transparency and productivity and service delivery etc. Yet, the study pointed to organizational resistance, lack of proper infrastructure and employee technology anxiety as key detractors from successful implementation (Afolabi et al., 2022). In the same vein, Suleiman et al. (2022) found that technological competence to support systems as well as organizational and management are some of the factors highly influencing employees' willingness to use AI technologies in Nigerian public organizations.

Adebisi and Gbegi (2020) conducted a study on electronic tax administration in Nigeria and found that technology driven tax systems enhance internal generated revenue and operational efficiency. On the other hand, the study found that limited training on digital systems and infrastructure defects challenged their effective use.

On the basis of the literature reviewed, the following hypotheses were proposed:

H₀₁: Employees' awareness of Artificial Intelligence technologies has no significant effect on willingness to adopt AI technologies.

H₀₂: Employees' perception of the usefulness of Artificial Intelligence technologies has no significant relationship with operational efficiency.

H₀₃: Challenges associated with Artificial Intelligence technologies have no significant effect on employees' acceptance and utilization of AI technologies.

3. Methodology

The design employed by the study is survey research design. This study was done at the Edo State Internal Revenue Service (EIRS), Benin City, Edo State, Nigeria. The study population consisted of 320 employees across Tax Operations, Information and Communication Technology (ICT), Revenue Collection, Administration, Audit and Compliance, and Taxpayer Services departments.

Using Taro Yamane sampling formula, a sample of 178 respondents was obtained. It was done through stratified random sampling to guarantee that people from every department would not be over-represented. Primary data was collected with the help of structured Questionnaire. It consisted of two parts. Respondent demographic information was recorded in Section A, and Section B contained fifty items from the questionnaire, each of which was evaluated on a five points Likert-scale ranging from Strongly Agree to Strongly Disagree over. The variables measured included employees' awareness of AI technologies, perceived usefulness of AI technologies, willingness to adopt AI technologies, challenges affecting AI adoption, and operational efficiency.

Since the instrument was subjected to expert appraisal for validity, test-retest was done by employing Cronbach Alpha reliability technique. The overall reliability coefficient was 0.86 showing high internal consistency of the instrument. Collected data were analysed using descriptive statistics such as frequencies, percentages and mean scores; hypothesis was tested by means of regression analysis Pearson Product Moment Correlation (SPSS version 25).

The model specification in the study is given as follow:

$$\text{OPE} = \beta_0 + \beta_1\text{AWA} + \beta_2\text{PUS} + \beta_3\text{WIL} + \beta_4\text{CHA} + \mu \dots \dots \dots (1)$$

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Where: OPE = Operational Efficiency; AWA = Awareness of AI Technologies; PUS = Perceived Usefulness of AI Technologies; WIL = Willingness to Adopt AI Technologies; CHA = Challenges Affecting AI Adoption; and μ = Error term.

4. Results and Discussion

Out of 178 distributed questionnaires for the study, a total of 178 questionnaires were retrieved (100% response rate). The demographic analysis found that 57.3% of respondents were male and 42.7% female. The majority of the respondents by age group were 31–40 years and most held HND/B.Sc qualifiers. Results showed high internal consistency on all variables in the reliability analysis.

The values of Coefficients of Cronhach Alpha obtained were 0.84 for awareness of AI technologies, 0.87 for perceived usefulness, 0.85 willingness to adopt AI technologies, challenges affecting adoption of AI technology as well as operational efficiency are respectively 0.81 and 0.88, indicating the good internal consistency levels among all construct variables.

Table 1
Descriptive Statistics

Variables	No. of Items	Grand Mean	Std. Deviation	Decision
Employees' Awareness of AI Technologies (AWA)	10	3.95	0.93	Agree
Perceived Usefulness of AI Technologies (PUS)	10	4.15	0.82	Agree
Willingness to Adopt AI Technologies (WIL)	10	4.09	0.85	Agree
Challenges Affecting AI Adoption (CHA)	10	3.99	0.91	Agree
Operational Efficiency (OPR)	10	4.13	0.83	Agree
Overall Mean	50	4.06	0.87	Agree

Source: SPSS Version 25, (2026)

The results from descriptive analysis as presented in table 1 indicates that overall employees are knowledgeable on the Artificial Intelligence technologies and digital tax administration systems. According to respondents, AI technologies have the potential to enhance operational efficiency, reduce errors, augment compliance monitoring and delivery of taxpayer services.

Employees were also positively inclined to embrace AI traits and demonstrated willingness toward acquiring more technological knowledge. Respondents, however pointed out that ineffective AI model adoption stems from lack of training, bad technological infrastructure, internet connectivity issues and apprehension towards losing their jobs among others. The regression found that employees perception variables are significant in explaining operational efficiency in the organisation.

Table 2
ANOVA Result

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	68.422	4	17.106	126.317	0.000
Residual	25.774	173	0.149		
Total	94.196	177			

Source: SPSS Version 25 (2026)

The regression model is statistically significant because the significance value of 0.000 is less than 0.05.

Table 3
Regression Coefficients

Variables	Beta	t-value	Sig.
Constant	1.108	4.011	0.000
Awareness of AI Technologies	0.291	5.442	0.000
Perceived Usefulness	0.337	6.103	0.000
Willingness to Adopt AI Technologies	0.269	4.998	0.000
Challenges Affecting AI Adoption	-0.214	-4.106	0.000

Source: SPSS Version 25 (2026)

Table 4
Model Summary

R	R Square	Adjusted R Square	Std. Error
0.854	0.729	0.721	0.368

Source: SPSS Version 25 (2026)

The findings reveal that awareness of AI technologies, perceived usefulness and willingness to adopt AI technologies have a positive and statistically significant relationship with operational efficiency. On the other hand, challenges impacting AI adoption hurts operational efficiency.

Discussion of Findings

Results of this research showed that respondents have a good level of perception about Artificial Intelligence technologies and the digital tax management systems in Edo State Internal Revenue Service (EIRS). Employees recognized the importance of intelligent technologies in modern tax administration activities, and were already familiar with various AI applications. The study also confirmed that employees consider Artificial Intelligence technologies to be useful tools for enhancing operational efficiency, revenue administration, compliance monitoring and service delivery. This finding is consistent with Dwivedi et al. (2021) who discovered that AI technologies significantly increase organizational productivity and operational effectiveness.

The results showed that employees are ready and open to implementation and use of AI technologies in the organization. Workers showed willingness to undergo AI training

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and pivot skills for the new technology. These results are aligned with the Technology Acceptance Model (TAM) that claims especially attitude towards technology is a significant predictor of its adoption behavior regarding perceived use and ease. In their study, the researchers found that challenges in implementing AI technology include lack of training, limited infrastructure, reluctance to change and fear of job displacement. This corroborates the study of Ezeani and Oladele (2023) which discovered infrastructural inadequacies and technology anxiety as significant hurdles to AI Implementation in Nigerian public institutions.

The regression analysis also revealed that the perception variables of employees significantly affect operational efficiency in the organization. This indicates that employee awareness, acceptance of the technology, readiness and organizational support systems play an important role in successful implementation of AI technologies by tax administration agencies.

5. Conclusion and Recommendations

The result of the study also reveals that there exist significant potentials of Artificial Intelligence technologies improve operational efficiency, service delivery and revenue administration in Nigeria tax administration agencies. Overall, the perception of employees of the Edo State Internal Revenue Service (EIRS) toward AI technologies is largely favorable and they recognize their role in tax administration today.

Moreover, this study concludes that employees' training and knowledge of AI technologies has a very positive impact on success in implementation and effectiveness operations in tax administration agencies. Still, infrastructural gaps, lack of training, a resistance to change and job loss anxieties are the biggest obstacles preventing successful AI implementation.

Drawing from the results, it is recommended among others that management of the tax administration agencies should set up awareness programs and technological sensitization campaigns. The next is to organize regular trainings and capacity building for the employees in order to improve technological competence and AI utilizations.

Governments and tax administration bodies need to invest in infrastructure, internet facilities, and technical support systems necessary for effective AI technology implementation. In addition, it is important to enhance organizational support and more efficient management of change for the successful implementation of AI-based systems in public sector enterprises while lowering employee resistance.

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