

In What Way Does Artificial Intelligence Influences Audit Practice? Empirical Evidence from Southwest, Nigeria

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ABSTRACT: *AI has gained significant traction as an innovative tool for automating tasks, enhancing data analytics, and reducing the risk of errors in auditing processes. This study investigated the impact of adopting artificial intelligence (AI) on the quality of audit practice in Nigeria, focusing on data mining, machine learning, and image recognition as proxies for the independent variable. Population was 251 accounting firms in southwest Nigeria, with a sample size of 159, purposively determined. The study utilized structured questionnaires for data collection, with regression analysis, and correlation matrices adopted for the analysis. The findings revealed a significant positive relationship between data mining and image recognition with the quality of audit practice in Nigeria. Machine learning, however, showed an insignificant negative relationship. This suggests that AI, particularly data mining and image recognition, can enhance audit quality in Nigeria. As a result, the study recommended that Nigerian audit professionals and firms should consider incorporating data mining techniques into their audit processes to improve effectiveness and error detection.*

KEYWORDS: *Artificial intelligence, Data mining, Machine learning, Image recognition, Quality of audit practice.*

INTRODUCTION

Artificial intelligence (AI) is seen as a key enabler in the development of global technology. It is also said to have a combative attitude to compete with human traditional intelligence and to

become a serious threat to the manual-based approach of accounting and auditing (Akinadewo, 2021). The synergies between AI and audit are likely to redefine the audit profession and have a significant impact on the quality, efficiency and effectiveness of auditing services in Nigeria. Therefore, it is expected that AI tools will impact almost every niche in the world. On the other hand, audit and financial services firms are increasingly turning to Artificial Intelligence (AI) as an effective tool to extract value-added information from complex data sets, resulting in better decision-making and increased economic benefits (Akinadewo, 2021; Das, 2021, cited from ICAEW, 2017).

Artificial intelligence (AI) is becoming increasingly popular as an innovative way to automate tasks, improve data analytics, reduce the risk of error, and improve auditing processes (Fedyk et al., 2022). Financial transactions are becoming increasingly complex, regulatory landscape is constantly changing, and financial reporting needs to be timely and reliable. AI has the potential to revolutionize the audit profession in Nigeria (Busayo et al., 2023). This global trend includes advanced machine learning (ML) and data mining (DML) techniques. AI is helping to reduce the error rate in accounting information and improve audit practices. As a result, many leading accounting firms are looking at AI integration to improve and streamline audit and accounting procedures. For instance, in Nigeria, AI has the potential to transform the audit profession (Owonifari et al., 2023).

While AI offers many opportunities, it also raises a number of challenges and uncertainties, such as causing fewer accounting jobs to open up in the market (Das, 2021; Nagarajah, 2016). AI also raises concerns and ethical considerations in auditing, such as bias, transparency and data privacy issues, which are particularly relevant in the auditing landscape in Nigeria (Dagunduro et al, 2023). As client-side systems become more complex, statutory auditors face a growing need to provide assurance on those complex systems while also using advanced technologies and data analysis in their audit processes. As a result, the audit profession continues to adapt by integrating AI technologies to stay competitive. As Derya (2020) argued, “AI technologies, which allow for faster and error-less work, have a significant impact on accounting and auditing, which will eventually lead to a significant change in the roles and skills of professionals.”

In order to better understand these dynamics, we will rely on empirical research and case studies, as well as insights from auditing practitioners in Nigeria. The purpose of this article is to explore the impact of AI on audit practice and to provide an in-depth analysis of the transformative impact of AI on auditing practice and its impact on audit service quality in Nigeria. it is believed that this article will help us gain a better comprehension of the changing nature of auditing and the wider implications of AI adoption on the business and regulatory landscape in Nigeria.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

This reviews the relevant variables, theories and empirical studies that established the gap that this study filled.

Conceptual Review

The independent and dependent variables were reviewed.

Artificial Intelligence

Artificial Intelligence (AI) is a multidisciplinary field that brings together knowledge from a variety of disciplines, such as Physiology, Computer Science, Philosophy, Mathematics, Statistics, and Linguistics, to create computer systems with human-like capabilities. The term “artificial intelligence” was first used by John McCarthy in 1956 at a seminar at Dartmouth College, where he coined the phrase “artificial intelligences” (Busayo et al., 2023). The term “AI” is also referred to as “Cognitive Technology” or “Cognitive Computing” and has a broad range of applications, not all of which are directly applicable to accounting. Because of its technical implications, AI has become a topic of interest in business education and practice, going beyond traditional disciplines. In today’s business world, AI technology is used across a variety of business functions, such as: Production and distribution, Procurement, Sales and marketing, Accounting and auditing, Accounting and finance, Research and development, and Human resource management, etc. As business operations become more complex and complex, AI technology is becoming increasingly important (Fedyk et al., 2022; Das, 2021; Reddy et al., 2019).

The audit profession is recognizing the need to integrate AI tools and Artificial Intelligence (AI) is seen as a key enabler in improving the synergies between AI tools and audit process. As a result, changes were made to the research model to incorporate IT tool proficiency as well as professional audit competencies to support the study’s exploration of disruptive technology. The Big 4 accounting firms recognize the significant potential of AI and are actively engaging in the use of AI technology. According to Raphael (2015), effective use of cognitive technologies will enable the audit process “smarter, more intelligent, and more effective” representing the “future of the audit profession” which will benefit financial statement users. Adept expert systems offer advantages in auditing, such as automatic understanding of audit processes and increased knowledge and know-how transferability (Omoteso, 2012; Lombardi and Dull, 2016). Public accounting firms have invested heavily in the development of expert systems with robust knowledge bases to support a wide range of audit tasks, such as planning, compliance testing and substantive testing, risk analysis, and decision making (Brown, 1991).

Quality of Audit Practice

Audit quality refers to the elements that increase the probability of auditors accomplishing their primary goal of providing reasonable assurance of a financial report being free from material errors (Dagunduro, 2023). It also includes the resolution or disclosure of significant deficiencies identified during the audit process. This includes the critical review of key accounting assumptions and treatments that have a significant impact on a financial position and financial results presented in a report (Cannon & Bedard, 2017). Audit is an independent review of an

organization's financial records as prepared and submitted to a statutory auditor. This review includes various financial statements such as: statement of financial position, income statement, statement of changes in equity, cash flow statement, etc. thus, the primary purpose of the audit is to provide an opinion as to whether the information contained in a financial report, taken as a whole, accurately reflects the financial position of an organization at a particular date. Consequently, as business operations become increasingly complex in today's corporate environment, the effective use of technology-driven decision aids is becoming increasingly important for the audit process (Owonifari et al., 2023).

Artificial intelligence (AI) has taken auditing to the next level by automating many of the previously manual tasks, such as data entry. AI systems, unlike human auditors, are able to analyze 100% of the data, build audit tests, and write scripts. AI's automated analysis of accounting entries significantly reduces human error and, in some cases, even detects fraudulent entries that trigger alerts. Understanding the audit process is essential to understanding the value of integration (Kearney, 2013). Auditing involves several steps aimed at collecting evidence to form an opinion on an entity's financial statements (Knechel & Salterio, 2016). These steps vary depending on risk factors and the effectiveness of internal control (Issa et al., 2016; Kokina & Davenport, 2017). AI can improve efficiency at each step of the audit process by acting as a continuum, with one step's output feeding into the next. The audit process includes: pre-planning, planning, understanding the entity, and risk assessment, among others. pre-engagement, helps auditors determine whether to accept new clients by assessing the client's internal policies, integrity of accounting procedures, management quality, compliance, and potential threats (Cannon & Bedard, 2017). AI, therefore, is an interesting area to explore, as it typically involves human interaction.

Data Mining

Data mining is the process of examining large datasets to find patterns and connections that can help to solve business issues and make better business decisions. It can also help to forecast future trends and improve decision making in enterprises (Taghizadeh et al., 2018). Conceptual frameworks have shown the advantages of continuous audit and data mining in the last 10 years, but practical challenges remain (Awotomilusi et al., 2022). In the auditing world, data mining is becoming more and more important. Online systems and sophisticated technology devices make accounting transactions more complex and vulnerable to manipulation. Due to the large amount of data involved in the auditing process, data mining is now a useful tool to simplify the evaluation process. (Falana et al., 2023)

Machine Learning

Machine learning (ML) is a branch of computer science that focuses on the development of algorithms that learn from large data sets, recognize patterns, and predict future events without explicit programming (Dogan & Birant, 2021). ML has applications in education, health science,

biology, finance, and many other fields. The term “machine learning” was first used by Arthur Samuel (1959), who defined it as “the ability of computers to acquire information from data.” In 1997, the term “machine” was extended to include “computer programs that are able to improve their performance as they learn from experience.” Both definitions emphasize the idea that computers learn patterns and trends in historical data to predict the future. The goal of machine learning is to find models that provide the most accurate and reliable predictions by building mathematical models from training data and assessing their predictive accuracy (Cho et al., 2020).

Machine learning has become an integral part of our day-to-day lives, with apps that help us analyze various data points relating to a particular situation to determine their relevance, and then use these results to predict the outcome in a similar situation (Shimamoto, 2018). Accounting and auditing are expected to undergo significant changes in the near future, driven by the combination of machine learning, AI, big data, blockchains, and other technological innovations, which will lead to an increase in automation in these areas (Türegün, 2019). In the area of auditing, leading accounting firms are already using machine learning to automate manual audit tasks and analyze large volumes of data, such as sales and purchase records (SVPs), general ledger entries (Journals), bank transactions, authorities, limits, etc. This analysis helps to identify transactions that significantly deviate from the norm and flags potential issues or errors (e.g. duplicate expense claims, unauthorised expenses, incorrect amounts, suspicious suppliers, invoices, etc.). Machine learning can also be used to read contracts and leases to identify key clauses, evaluate risks, highlight anomalies, and more (Türegün, 2019).

Image Recognition

Image recognition is also known as photo recognition or picture recognition. The goal of image recognition is to identify objects in an image and classify them into different categories. This has been a research topic in computer vision for a long time. The goal of object recognition is to classify the objects found in an image into different categories. The goal is to determine what an image represents. In computer vision, object recognition is often referred to as object recognition (Eno et al., 2019). In contrast, image detection uses an image as an input and finds various objects in an image. For instance, a face detection algorithm aims to find patterns of faces within an image. In contrast, in image detection, only one object is distinguished from another and the number of distinct entities in the image is determined. Image recognition has been used for financial statement audit and fraud detection in Western countries. However, its use in auditing and accounting in developing countries such as Nigeria, Ghana and other African countries is relatively new (Shaher, 2020).

Artificial Intelligence and Quality of Audit Practice

AI is defined as the integration of new technologies to improve the efficiency and effectiveness of business operations. Machine learning models play an important role in making predictions

and decision-making during the audit process. This, in turn, reduces the likelihood of financial distress showing up in a company's financial statements. Dagunduro et al. (2023) emphasizes the importance of big data techniques in predicting financial distress in companies, such as binary models, life test methods with fifty-four financial parameters, and corporate governance models. Chang and Hwang, (2020), found that the variables used to predict financial distress performed well in the audit process.

Audit evidence is the information that auditors use when auditing financial statements to ensure that the information presented in financial statements is accurate and fair. Ivy et al., (2020) emphasize the need for effective and practical governance regarding the use of artificial intelligence (AI) in audit methodologies in order to facilitate ethical decision making. They argued that, with the correct audit evidence, ethical judgments and decisions can be made regarding financial statements. Conversely, Al-Sayyed et al. (2021) and Owonifari et al. (2023) argued that AI can have a positive impact on audit evidence and decision making, but that auditors need to acquire the skills and knowledge to make ethical decisions while assessing audit evidence. They also highlight ethical concerns in the context of auditing, citing cases where auditors did not act ethically when providing opinions on financial statements, and recommend the use of various tools to monitor auditor behavior, particularly in the fields of opinion issuance and detection of dishonesty (Awotomilusi et al., 2022).

Theoretical Review

This study was based on two main related theories: The Agency theory and Credibility theory. The Agency theory is one of the most important theories in auditing. It focuses on the relationship between the managers (the agents) and the investors (the principals). Ideally, managers are acting in the best interests of investors (Commerford et al., 2019). However, there are situations where managers may not act in their best interests (Shogren et al., 2017). Auditing plays an important role in ensuring that managers are actually acting in the interests of investors. Auditors advise investors and manage these relationships. Audit reports help investors to make informed decisions about their investments. As companies grow, the amount of data that requires auditing increases. Auditors need to provide timely and relevant information that meets stringent reliability standards (Blair & Stout, 2017).

The role of AI systems is expected to be strategic in accomplishing these goals. AI allows auditors to audit financial statements remotely, which allows auditors to review financial statements from different locations. This can be especially useful in cases where the source and users of information are separate. AI also makes it easier to handle complex financial information and reports that have become more complex over time (Blair et al., 2017). AI also eliminates conflicts of interest when it comes to reporting financial performance. Directors may have an incentive to present a distorted performance, but investors prefer accurate reporting. AI systems make it easier to audit financial reports, thereby reducing conflicts of interests and improving the agency theory's objectives. The concept of credibility in auditing has its roots in

the work of Thomas Bayes (18th century mathematician). Bayes' theory has been shaped by the work of numerous researchers and practitioners, including those in statistics, economics and finance. This is why financial statements are so important for corporate managers to communicate with their stakeholders in a way that reduces the amount of information that is not in the same place as the one they are looking at (Chen et al., 2018).

Conflicts of interest among management and investors can also affect the credibility of the statements (Al-Shaer & Zaman, 2018). As a result, independent auditors are essential to review the financial information and to inspire confidence. Meanwhile, the use of artificial intelligence systems in auditing is in line with the credibility theory, as highlighted by Chen et al. (2018). AI, thus, improves the speed and quality of the auditing process, which in turn improves the audit quality. Standardization and automation reduces the risk of human mistakes. This allows auditors to assess the accuracy of data more accurately. Rather than sampling, auditors are able to analyze entire data populations. All in all, the adoption of artificial intelligence in auditing improves the audit quality and effectiveness, and is in line with ongoing technological developments. There are some challenges in the adoption of AI audit software, but its effectiveness and quality are likely to increase as the software matures (Matonti, 2018).

Empirical Review

The use of AI and its effects on audit practices have been extensively analyzed by researchers through various analytical techniques. For instance, Monal et al. (2022), examined how AI impacts the development of the accounting & auditing profession. The study, which adopted secondary data from the accounting firms in Bahrain, analysed data using quantitative content analysis. In the findings, it was revealed that AI adoption is expected to bring a new age of innovation and creativity in accounting & auditing, which will contribute to the development of the profession.

Hasan (22) reviewed the use of AI in Accounting and auditing using a semi-structured or narrative review methodology. The study looked at books and journals published in the field and found that due to disruptions in the economic sector, the accounting & auditing profession needs to change in order to move forward. The study highlighted the need for interdisciplinary cooperation in research on AI in accounting & auditing. The wider acceptance of AI in the accounting profession is expected to provide advantages in terms of efficiency, productivity & accuracy. The Onwughai (2022) study looked at the impact of the adoption of AI and machine learning on accounting functions within business organizations. The data was collected using a survey and qualitative literature review methodology. The results showed that AI may replace mundane accounting tasks, but it also opens up new possibilities for accounting profession to take on strategic & rewarding roles outside of bookkeeping. For Nigerian companies, the regression model showed no statistically significant association between AI & accounting functions.

An analysis of the relationship between AI and accountants' approach to accounting functions was conducted by Akinadewo (2021). The study used a structured questionnaire to sample 205 accountants with systems application experience in accounting and financial transaction functions. The results of the study showed that artificial intelligence had a significant positive effect on how accountants approached their accounting functions. An exploratory study on the impact of digitalisation on the audit profession was conducted by Vardia et al. (2021) in India. The purpose of the study was to understand the degree of understanding and to analyse the effect of digitalisation on auditing practices in India. The analysis was conducted using the Chi-square statistical method. The results showed that digitalization had a significant impact on working methods and processes in auditing in India.

The study of Sharma et al. (2021), assessed the perception and adoption of AI in accounting amongst accounting practitioners and others. The data was collected via structured questionnaires among accounting practitioners, business owners, teachers, and students. The analysis was made through partial least square structure equation modeling. According to the qualitative findings of the study, the intention to adopt AI in accounting is influenced slightly by insecurity, attitude towards use, and perception of ease of use. The qualitative findings highlighted the importance of AI in the detection of fraud and risk prevention in accounting.

A qualitative study on the pros and cons of automation in accounting was conducted by Taha (2021). The study looked at the impact of automation on employability among qualified accountants. The study included interviews with financial instructors and employees, students and business managers, as well as a literature review of articles on the effects of computerization on the accounting industry. The results of the study indicated that the introduction of robotics into corporate bookkeeping may reduce the number of consultancy jobs, as well as positions requiring basic analytical skills. Another study, by Marija Mitavska (2021), looked at how Artificial Intelligence (AI) can help the accounting & auditing industry cope with the challenges caused by the pandemic, and how AI can help solve them. The study used secondary data sources to highlight the importance of AI systems in the pandemic, as well as the impact of AI on Nigeria's accounting profession. The design of the study was based on a field survey design, and the participants included accountants from the four leading accounting firms in Nigeria. According to the study, artificial intelligence played a major role in the changing landscape of accounting in Nigeria.

Rahman (2021) focused on the relevance and challenges of the adoption of AI in the banking sector in Malaysia as well as the factors that influence consumers' intention to use AI in bank services. Rahman's research included a qualitative and quantitative approach. In the qualitative phase of the research, Rahman conducted extensive interviews with bank officials in Malaysia to gain insight into the relevance and challenges related to the adoption of artificial intelligence in the banking sector. The findings showed that AI plays an important role in areas like fraud detection, risk prevention, etc. However, the lack of regulation, privacy and security concerns,

lack of skills, and IT infrastructure were some of the major challenges to adoption of AI in banking. During the quantitative phase, Rahman collected 302 completed questionnaire responses from Malaysian banking clients. Using regression analysis, he identified the main predictors of consumer's intention to use AI. The quantitative results showed that: consumers' attitudes towards AI, their perception of its usefulness, risks associated with AI, and Level of trust in AI among others.

Almufadda et al. (2020) looked at the use of AI in the auditing profession. The study looked at a selection of papers published in the years 2016-2020. The authors found that the adoption of AI in audit practice is mainly limited to the big 4 accounting firms. Shahher (2020) studied the impact of AI technologies on auditing audit evidence from the point of view of certified auditors working in IT companies. The study included 314 auditors and included a structured questionnaire. The results showed that AI technologies significantly impact audit evidence. Abiola & Solomon (2020) examined the use of AI on accounting operations in Nigeria, especially in the context of COVID-19. The researchers used regression analysis to find a significant impact of AI on accounting functions efficiency and job security. The study was conducted in the Gaza Strip and the results showed that AI had a significant positive impact on professional performance and efficiency, as well as system development.

Eno et al. (2019) examined the potentials, challenges, and uses of Artificial Intelligence in Banking, Accounting, and Auditing in Nigeria. Using both qualitative and quantitative approaches, they explored the potential roles of Artificial Intelligence (AI) in the future of Banking and Auditing systems. Aneta Zemankova, (2019) analyzed the impact of Artificial Intelligence on Audit Efficiency and Integrity, with a particular focus on the impact of blockchain technology on the audit process. The study focused on the advantages of AI in enhancing audit efficiency and integrity, as well as reducing errors. Odoh et al. (2018) analyzed the implications of AI on Accounting Operations in Accounting Firms in South East Nigeria. Expert systems and intelligent agents had a significant impact on accounting functions in accounting firms, suggesting a positive impact on accountants' duties.

The empirical review demonstrated that in Nigeria, there is a scarcity of research investigating the correlation between AI and the standard of audit practices. Furthermore, the existing studies predominantly concentrated on the big 4 accounting firms, neglecting the consideration for practitioners from small and medium-sized audit firms. As a result, the research hypotheses are formulated as follows:

H₀₁: Data mining has an insignificant impact on the quality of audit practices in Nigeria.

H₀₂: Machine learning has an insignificant impact on the quality of audit practices in Nigeria.

H₀₃: Image recognition has an insignificant impact on the quality of audit practices in Nigeria.

METHODOLOGY

The research was conducted using a survey research design and focused on a sample size of 251 accounting firms in the southwest states of Nigeria (Lagos State, Ekiti State, Ondo State, Osun State, Oyo State, and Ogun State). Purposive sampling methodology was used to determine the sample size. The objective of the purposive sampling was to select firms from the population who had included any of these AI variables in their auditing process. A sample size of 159 was considered sufficient to ensure the reliability of the data. The primary data was collected using a well-structured questionnaire. Each firm received four questionnaires and 636 questionnaires were distributed for data collection purposes. Descriptive statistics were analyzed using OLS regression analysis.

Model Specification

To investigate the implementation of artificial intelligence and its impact on the quality of audit practices in Nigeria, the study constructs its model as follows: $QAP = f(DM, ML, IR) \dots \dots \dots 3.1$

For the model in equation 3.1 to be stated in an econometric form, it becomes:

$$QAP = \gamma_0 + \gamma_1 DM + \gamma_2 ML + \gamma_3 IR + \mu \dots \dots \dots 3.2$$

Where:

- QAP = Quality of Audit Practice
- DM = Data Mining
- ML = Machine Learning
- IR = Image Recognition
- μ = Error Term
- γ_0 = Intercept
- $\gamma_0 - \gamma_3$ = Coefficient of the Estimates

RESULTS AND DISCUSSION OF FINDINGS

This shows the findings of the study and the respective discussions.

Demographic Analysis

Table 1: Demographic Analysis

S/N	Demographic Variables	Grouping	Frequency	Percentage
1	Date of Incorporation of the firm	1986	105	17.4%
		1990	124	20.5%
		1992	110	18.1%
		2007	148	24.5%
		2013	118	19.5%
2	Number of Partners	Management Partners	386	63.8%
		Senior Partners	219	36.2%
3	Number of offices in Nigeria	5	176	29.1%
		4	132	21.8%
		3	96	15.9%
		2	103	17%
		1	98	16%
4	Qualifications of respondents	NCE	100	16.5%
		B.Sc./HND	311	51.4%
		M.Sc.	73	12.1%
		Professionally	121	20%
5	What other services do you offer your clients apart from the audit	Tax Management	103	17.0%
		Financial consulting	102	16.9%
		Recruitment services	27	4.5%
		Training and Human capital development	162	26.8%
		Investigation & Forensic auditing	211	34.9%
6	Affiliation with International firms	Yes	265	43.8%
		No	340	56.2%
7	Years of experience of respondents in audit practice	Between 1 and 5 years	12	2%
		Between 5 and 10 years	173	28.6%
		Between 10 and 15 years	182	30.1%
		Over 15 years	238	39.3%

Source: Authors' Computation (2023)

The findings presented in Table 1 depict the demographic characteristics related to the adoption of artificial intelligence and the quality of audit practice in Nigeria. Regarding the establishment date of the firms, it was observed that 105 respondents (17.4%) indicated that their firms were founded in 1986, 124 respondents (20.5%) mentioned that their firms were established in 1990, 110 respondents (18.1%) stated that their firms originated in 1992, 148 respondents (24.5%) reported that their firms were formed in 2007, while 118 respondents (19.5%) noted that their firms were incorporated in 2013. Concerning the composition of partners, 386 respondents (63.8%) stated that their partners hold management positions, while 219 respondents (36.2%) indicated that their partners serve as senior partners.

On the number of offices owned by the firms in Nigeria, 176 (29.1%) revealed that they have five (5) offices, 132 (21.8%) revealed four (4) offices, 96 (15.9%) revealed three (3) offices, 103 (17%) revealed two offices while 98 (16%) revealed one (1) office. Moreover, the educational qualification of the respondents indicated that 100 (16.5%) are holders of NCE certificate, 311 (51.4%) are BSc/HND holders, 73 (12.1%) are M.Sc. holders, while 121 (20%) indicated that they are holder of professional qualifications. To ascertain other services offered to clients aside from audit, it was revealed that 103 (17.0%) offer tax management services, 102 (16.9%) offer financial consulting services, 27 (4.5%) offer recruitment services, 162 (26.8%) offer training and human capital development service while 211 (34.9%) offer investigation and forensic auditing service. This clearly showed that most of the firms offer training and human capital development service. To know whether the firms have affiliation with international firms, 265 (43.8%) showed that they have affiliations outside the country while 340 (56.2%) indicated that they have no international affiliations outside the country.

Lastly, to know the years of experience of the respondents in audit practice, 12 (2%) have below 1-5 years of experience, 173 (28.6%) indicated between 5-10 years of experience 182 (30.1%) revealed that they have between 10 to 15 years' experience while 238 (39.3%) revealed that they have experience of over 15 years. The result clearly showed that most of the respondents have over 15 years of experience with audit practice.

Reliability Test

Cronbach's Alpha was employed to assess the reliability of the tools utilized in this investigation. In this context, a threshold of 60% or higher is deemed acceptable. The table provided in Table 4.2 contains the values for all the variables, and it is evident that all the variables subjected to testing exhibit Cronbach Alphas surpassing 60%. Hence, it can be deduced that the measurements are indeed reliable.

Reliability Statistics**Table 2: Cronbach Alpha Test Results**

S/N	Variable	No. of Items	Cronbach's Alpha
1	Quality of Audit Practice (QAP)	7	0.823
2	Data Mining (DM)	8	0.766
3	Machine Learning (ML)	6	0.775
4	Image Recognition (IR)	6	0.783

Source: Authors' Computation (2023)

Linearity Test

Table 3 shows the correlation matrix showing the relationship between artificial intelligence adoption in Nigeria and audit practice. Data mining has a correlation coefficient of 0.260, suggesting that artificial intelligence adoption, especially through data mining, positively impacts audit practice. Machine learning has a positive correlation with audit practice but a statistically insignificant correlation of 0.005, suggesting that an increase in machine learning-facilitated artificial intelligence has a limited effect on increasing audit practice. On the other hand, image recognition has a positive correlation for audit practice in Nigeria of 0.118, suggesting that an increased focus on image recognition among artificial intelligence adoption will result in an increase of audit practice in Nigeria by 0.118 units. It is worth noting that none of the other explanations in the model have multicollinearities, with the highest correlation of 0.460 being below the benchmark value of 0.7.

Table 3: Correlation Analysis of Study Variables

QAP	DM	ML	IR
QAP	1.0000		
DM	0.260** (0.000)	1.0000	
ML	0.005 (0.897)	0.329** (0.000)	1.0000
IR	0.118** (0.004)	-0.460** (0.000)	-0.218** (0.000)
			1.0000

Source: Authors' Computation (2023)

Multicollinearity Test of Variables

The multicollinearity assessment utilized tolerance and variance inflation factor (VIF), and the findings are summarized in Table 4. The tolerance value for data mining stands at 0.734, machine learning exhibits a tolerance value of 0.886, and image recognition has a tolerance value of 0.783. Additionally, the Variance Inflation Factor (VIF) results indicate values of 1.363, 1.128, and 1.277 for data mining, machine learning, and image recognition, respectively. These results clearly indicate the absence of any multicollinearity issues, as all variables possess tolerance values greater than 0.1, and their VIF values are below the threshold of 10.

Table 4: Tolerance and VIF Value

Variable	Tolerance	VIF	1/VIF
DM	0.734	1.363	0.734
ML	0.886	1.128	0.887
IR	0.783	1.277	0.783
Mean VIF		1.256	

Source: Authors' Computation (2023)

Presentation of Regression Result

Table 5: Model Summary^b

Model	R	Adjusted Square	Std. Error of Estimate	ErrorChange Statistics					
				Change	F Change	df1	df2	Sig. F Change	
1	.878 ^a	.743	.739	1.02276	.143	33.472	3	601	.000

a. Predictors: (Constant), IR, ML, DM

b. Dependent Variable: QAP

Source: Authors' Computation (2023)

Table 6: Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients		Sig.	Collinearity Statistics	
	B	Std. Error	Beta	t		Tolerance	VIF
1 (Constant)	.910	.358		2.540	.011		
DM	.459	.048	.420	9.506	.000	.734	1.363
ML	-.075	.044	-.068	-1.694	.091	.886	1.128
IR	.324	.047	.296	6.920	.000	.783	1.277

Dependent Variable: QAP

Source: Authors' Computation (2023)

Tables 5 and 6 present the findings from the ordinary least squares (OLS) analysis conducted to assess the incorporation of artificial intelligence and its impact on the quality of audit practices in Nigeria. In this analysis, the quality of audit practice was considered as the dependent variable, while the independent variables encompassed data mining, machine learning, and image recognition. The association can be expressed as follows: $QAP = 0.910 + 0.459_{DM} - 0.075_{ML} + 0.324_{IR}$

The regression analysis concerning the integration of artificial intelligence and its impact on audit quality in Nigeria has provided valuable insights. While keeping all other independent variables constant, it was observed that the quality of audit practice is expected to increase by 0.910 units. Specifically, the coefficient for data mining displayed a positive and significant effect, indicating that a one-unit increase in data mining corresponds to a 0.459 unit increase in audit quality in Nigeria. Conversely, the coefficient for machine learning exhibited a negative and insignificant relationship, implying that a one-unit increase in machine learning might decrease audit quality by 0.075 units. On the other hand, the coefficient for image recognition was 0.324 units, signifying a significant and positive association. This suggests that a one-unit increase in image recognition would lead to a 0.324 unit improvement in audit quality in Nigeria.

The F-statistics value from Table 5 was 33.472 with a corresponding probability value of 0.000, indicating high significance. This suggests that the entire model effectively explains the relationship between the adoption of artificial intelligence and audit quality in Nigeria. The coefficient of multiple determinations, represented by R², was 0.743, indicating that approximately 74% of the variations in audit quality can be attributed to the adoption of artificial intelligence, while the remaining 26% is attributed to random factors within the model.

DISCUSSION OF FINDINGS

This study explored the integration of artificial intelligence and its impact on the quality of audit practices in Nigeria. The empirical analysis revealed several key findings. Firstly, data mining exhibits a positive and significant relationship with the quality of audit practice in Nigeria. This outcome suggests that an increase in the utilization of data mining will enhance the quality of audit practice in the country. The findings suggest that incorporating data mining techniques in audit practices can significantly improve their effectiveness. Audit professionals and firms in Nigeria should consider integrating data mining tools and methodologies into their audit processes to enhance their ability to detect errors, irregularities, and potential fraud within financial statements. This result aligns with prior expectations and is consistent with previous research conducted by Taghizadeh et al. (2018), Chang and Hwang (2020), Ivy et al. (2020), Al-Sayyed et al. (2021), Zayed and Thammatucharee (2021), and others, highlighting the capacity of data mining techniques to enable businesses to predict future trends and make more informed decisions.

Conversely, machine learning exhibits a significant but negative relationship with the quality of audit practice in Nigeria. The findings demonstrate that auditors and audit firms in Nigeria should exercise caution when implementing machine learning in their audit processes. The negative relationship suggests that, if not used judiciously, machine learning techniques may potentially compromise the quality of audit practice. This unexpected negative effect may be attributed to the associated high costs of implementing machine learning in artificial intelligence. This result contradicts the initial expectations outlined in this research and stands in contrast to the findings of Cho et al. (2020), Dogan and Birant (2021), Shimamoto (2018), Türegün (2019), Monal et al. (2022), Akinadewo (2021), Kwarbai, and Omojoye (2021), among others.

Furthermore, the coefficient for image recognition is both significant and positively correlated with the quality of audit practice in Nigeria. This implies that an increase in the utilization of image recognition within artificial intelligence will enhance audit quality in Nigeria. Also, the positive correlation suggests that the adoption of image recognition technology can enhance the quality of audit practices in Nigeria. Auditors should consider integrating image recognition tools to improve their ability to identify, classify, and analyze visual data within financial statements. This result is consistent with the prior expectations of this study and aligns with the findings of Eno et al. (2019), Shaher (2020), Chang and Hwang (2020), Hasan (2022), Onwughai (2022), Sharma et al. (2021), Zhang and Ziong (2020), and others. These studies collectively suggest that machine learning, particularly image recognition, contributes to improved audit quality by effectively distinguishing distinct entities within images and data, thereby enhancing the audit process.

CONCLUSION AND RECOMMENDATIONS

This study delved into the integration of artificial intelligence (AI) and its repercussions on the quality of audit practices in Nigeria. The empirical analysis furnished noteworthy findings: Data mining revealed a positive and substantial relationship between data mining and audit practice quality in Nigeria. It signifies that an augmented use of data mining can enhance the effectiveness of audit practices. The incorporation of data mining techniques into audit processes is recommended for Nigerian audit professionals and firms to improve error detection, identify irregularities, and potentially uncover fraud in financial statements. Surprisingly, machine learning exhibited a significant but adverse relationship with audit practice quality in Nigeria. This implies caution when implementing machine learning in audit processes, as indiscriminate use may potentially compromise audit quality. The unexpected negative effect could be attributed to the high costs associated with machine learning implementation in AI. On a final note, the study found that image recognition is both significant and positively correlated with audit practice quality in Nigeria. This suggests that leveraging image recognition technology can enhance audit quality by improving the identification, classification, and analysis of visual data within financial statements. Auditors are encouraged to incorporate image recognition tools to elevate their ability to discern entities within images and data, ultimately enhancing the audit process. This result aligns with previous research highlighting image recognition's role in bolstering audit quality.

In conclusion, the integration of AI into audit practices in Nigeria yields diverse outcomes for different AI techniques. Data mining stands out as a positive contributor to audit practice quality, while machine learning exhibits a potential downside when not implemented judiciously. Image recognition, on the other hand, offers substantial benefits in enhancing audit quality. The study recommended that: Nigerian audit professionals and firms should consider incorporating data mining techniques into their audit processes to improve effectiveness and error detection; caution is advised when implementing machine learning in audit processes due to the potential negative impact; careful cost-benefit analyses should precede such implementations; and auditors should explore the integration of image recognition tools to enhance visual data analysis and improve audit quality.

Contributions to Knowledge:

This study contributes to the knowledge of AI integration in Nigerian audit practices by uncovering distinct relationships between different AI techniques and audit quality. It highlights the potential benefits and drawbacks, offering valuable insights for auditors and firms.

Suggestions for Further Studies

Future research can delve deeper into the nuances of machine learning's impact on audit practice quality in Nigeria, exploring factors contributing to its unexpected negative correlation. Additionally, investigating the practical implementation challenges of AI in Nigerian audit firms could provide further insights.

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