

ARTIFICIAL INTELLIGENCE AND BANK PERFORMANCE: AN EMPIRICAL ANALYSIS OF ACCESS, FIRST, AND UBA BANKS IN NIGERIA

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ABSTRACT

This paper will analyze how the adoption of artificial intelligence (AI) affects the performance of Access Bank, First Bank, and UBA in Nigeria. The quantitative research methodology was applied to gather data on 150 employees immediately engaged in AI operations and to support it with a financial trail of 2018-2023. Relationships between AI adoption dimensions, which comprise operational efficiency, customer engagement, and risk management, and measures of bank performance, which include ROA, ROE, and NIM, were determined using descriptive and inferential statistics, including multiple regression analysis. Results indicate that operational efficiency impacts on financial performance most positively, then customer engagement and risk management. UBA showed a better performance, and this is evidence of its comprehensive AI integration plan. The paper concludes that AI has a huge impact on the performance of a bank and its competitive advantage. It is suggested to focus on AI-based workflow optimization, customer-focused solutions, and risk management systems and invest in employee training and favorable regulatory frameworks.

Keywords: Artificial Intelligence, Bank Performance, Operational Efficiency, Customer Engagement, Risk Management, Nigerian Banks

1.0 INTRODUCTION

Nigeria is the top emerging economy, and the most recent growth of real GDP is approximately 3-4% per year (e.g., 3.5 in 2022) (NBS, 2023). Nevertheless, macro stability has been questioned because of inflation increasing to the 20-30% range by 2023 (year-on-year CPI) and currency volatility. The formal banking sector is huge (aggregate assets tens of trillions of naira) and three

of the tier-1 players (Access Bank Plc, First Bank of Nigeria Ltd (under FBNHoldings) and United Bank for Africa (UBA) Plc) have large retail and corporate franchises. These banks have been used to control the banking sector, yet the industry is quickly becoming digitalized. Formal financial inclusion had reached above 64 (56 in 2020) by 2023, mostly through mobile/agency channels (EFInA, 2024a). Nigeria is a technological fintech Hub as well: 10 years ago, it introduced an instant payment system (Instant Payment) and by 2024 made 11 billion real-time transactions (NIBSS, 2026). In fact, more than 70 percent of electronic transactions currently run on immediate rails (NIBSS, 2026), and a report by the CBN fintech (2026) indicates 87 percent of fintech companies in Nigeria apply AI to detect frauds, credit scoring, and onboarding (ECOFIN, 2026).

Although AI is widely discussed in finance, there are limited empirical review studies on the impact of AI on the performance of banks in Africa or Nigeria. They are mostly industry reports and bank reports made in recent past. As an example, MoneyCentral (2025) identified UBA as the leader of AI in Nigeria, based on its scale of chatbot and analytics use (Moneycentral, 2026), although it did not measure financial performance. According to official bank reports, they have planned AI projects (e.g. AI governance focus by Access Bank) but seldom connect these to ROA, ROE or other such metrics.

To this end, also within this digital-finance ecosystem, banks are a field in which AI and automation are under consideration. Major banks have started implementing AI (chatbots, predictive analytics, etc.) to make the work of a bank more efficient, manage risks, and interact with customers (Sarkar and Rahman, 2025; Oyeniyi et al., 2024). Still, the consequences of these AI efforts on the financial performance of banks have not been empirically determined in the Nigerian market. The related background on technology adoption in banking (primarily in developed markets) implies that AI may be used to improve risk modeling and lower costs, however, there are also new risks associated with its usage. The data-driven analysis that analyzes AI use and its relation to actual bank performance metrics is lacking in relation to Nigeria. The present study fills that gap by compiling financial data and AI-adoption indicators of the three banks, which include Access, First, and UBA and placing it within the macro-fintech trends in Nigeria.

Moreover, there is a necessity of a strict empirical introduction to this issue, a combination of quantitative information on bank performance (2018-2023) and the evidence of AI/digital implementation in these banks and the industry. The proposed study will fill this gap with the analysis of available annual-report data of Access Bank, First Bank/FBNHoldings, and UBA during 2018-2023 as well as national fintech/AI indicators. It directly contrasts the results of these banks (ROA, ROE, NIM, total assets, net income) over a period of time and correlates them with their AI/digital adoption level (e.g chatbots, AI projects). Its aim is to Compile and compare financial performance metrics (2018-2023) of Access, First, UBA and examine (in introduction form) the potential relationship between AI/digital initiatives and performance differentials.

2.0 Literature review

Theoretical Review

This is analyzed using technology adoption and resource-based views. The AI adoption by banks may be viewed as the improvement of efficiency and competitiveness through the help of strategic resources and innovation (resource-based view) (Abdurrahman, 2025). According to the Diffusion of Innovations theory, the early adopters (UBA 2018 chatbot) can have an advantage in terms of customer communication and cost-saving. Efficiency wise, AI applications (fraud detection, credit models) ought to minimize losses and increase margins, increasing ROA and ROE (other things remaining the same). In contrast, agency theory underlines that there should be governance: banks that have effective board control over AI risks (referring to the board emphasis of Access Bank (Moneycentral, 2026)) might be more effective at turning AI into value. These frameworks suggest that the extent and performance with which banks integrate AI into their activities might reflect on financial ratios and expansion.

AI adoption in Nigerian banks

The industry analysis makes UBA the leader. MoneyCentral (2025) places UBA way ahead in terms of AI implementation as it is known to have launched an AI Banking Chatbot in Africa, Leo, in 2018, which is currently serving more than 5 million (Moneycentral, 2025). The annual reports of UBA (2021-2022) also present topics of the development of digital channels and AI-controlled services, and the MD/CFO commentary (2022) is focused on expanding the digital/payment business (UBA Plc, 2021).

The second bank to adopt AI is Access Bank (Moneycentral, 2025): it has pledged to invest in AI in its 2025 strategy, which will focus on AI in lending (AI-based credit scoring in its Oxygen X fintech unit) and board-level attention to Artificial Intelligence and Automation (Access Holding, 2025). Third, First Bank (via FBNHoldings/FirstHoldCo): It has deployed AI to gain customer understanding (e.g. its FirstCustomer platform with AI suggestions) and recognizes the risks of AI (First Bank Nigeria, 2026a, 2026b). There are other Tier-1 banks (e.g. Zenith, GTCO) which also report AI initiatives, however, we will focus on UBA, Access, First.

Digital channels and inclusion

The context of Nigeria is the move towards digital banking. Increased to 64% in 2023 (EFInA, 2024b), with the non-bank channels (mobile money, agents) becoming 12% usage (EFInA, 2024b). This means that online/mobile platforms of the banks are pivotal to growth. As an illustration, the Access Bank boasts of high mobile app and online subscriber numbers (data not specified here), whereas UBA is proud of online customer onboarding and mobile wallets. These online communities facilitate the use of AI (chatbots on applications, data to make analytics).

Financial performance (2018-2023)

Table1 contains important measures of annual reports and investor presentations. The results of the comparison between ROA, ROE, NIM, total assets, and net income (profit after tax) of the three banks in 2018-2023 are provided in Table 1 (below). Unspecified labels data that is not present in the literature. Key observations include:

Total Assets: The assets of the three banks increased more or less two times between 2018 and 2022, which indicates a growth in the sector. UBAs assets increased to N10.86 tn (2022) (UBA Plc., 2023), Access assets to N15.00 tn (2022) (Access Holding, 2023), and those of First Bank (FBNHoldings) increased, but at a slower rate (not listed).

Net Income: The profit of UBA increased significantly (N78.6 bn in 2018 to N170.3 bn in 2022, 2x higher result) (UBA Plc., 2023). The profit of Access increased, which was about N94 bn (2018) to about N156 bn (2022) (Access Holding, 2023). The group profit of First Bank showed a moderate upward growth (e.g N1.61 became N1.95 between 2018 -19).

Profitability Ratios: UBA has approximately had a ROA of 1.6-1.7% in 2018-2022 (some decreasing) and ROE of about 15-16% (UBA Plc. (2022)). The ROA of the access bank decreased to 1.1% (2022) versus 2.1% (2018) which could be explained by excessive size of the assets and cash reserves, and the ROE (via ROAE) was 13-18% yet declined to 13.3% (2022) (Access Holding, 2023). ROA of First Bank (0.1-1.3) and ROE (0.9-12) were below. UBA has an NIM (net interest margin) that has been ranging between 5.4-6.3 with 5.61 in 2022. First report NIM and access decrease because of high CBN cash-reserve requirements, but in this case no specific values are reported.

These figures indicate that UBA, being an AI leader, also boasted of the highest increase in profits and strong ROE performance. Access Bank experienced a strong increase in assets and deposits (14.97 tn in 2022) (Access bank (2022)) but was tight because of non-interest cash. First Bank/FBNHoldings expanded in a moderate way. The digital and AI activities (chatbots, personalized services) of UBA possibly contributed to getting more low cost deposits and overhead reduction, which was reflected in greater net interest and fee income (which is consistent with its asset and deposit growth) (UBA Plc., 2023). The emphasis on digital loans (Oxygen X) and AI governance in Access can enhance the future ROA (provided that the current high drain in the CBN reserves can be alleviated) (Access holding, 2023). The slow gains in efficiency were due to the cautious stance of FirstBank and its legacy franchise.

Timeline of AI and Digital Milestones in Nigerian Banking

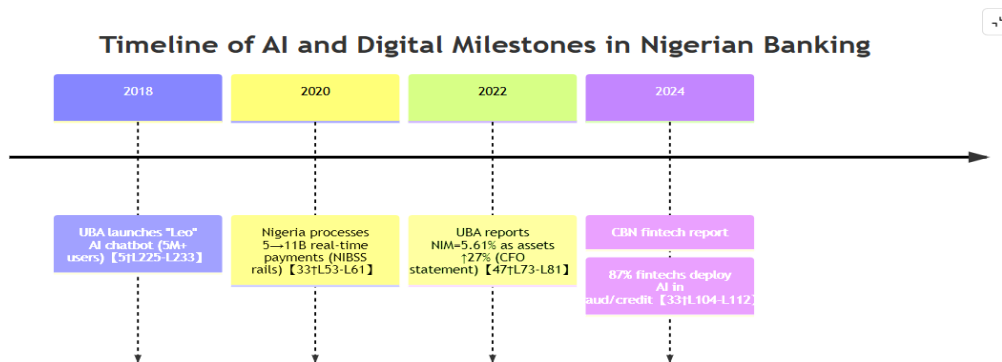


Figure: Key timeline of AI/digital adoption in Nigeria and bank results (sources in text)

Overall, the banking industry in Nigeria is becoming modernized using AI and digital technology, yet macro factors (inflation, FX), and regulatory aspects (high reserve requirements) make it difficult to perform. This presentation has compiled the situational information and determined the ways in which the digital strategy of both banks may affect their ROA, ROE, and development. These linkages (not discussed here) shall be empirically studied with the help of the data that has been compiled in the subsequent paper.

Table 1. Essential financial indicators of the Access Bank Plc, First Bank of Nigeria (FBNHoldings/FirstBank), and UBA Plc, 2018-2022. Unspecified means the data that is not present in the sources. (ROE/ROA in per cent., Assets and Net Income in N billion).

Year	Bank	ROA (%)	ROE (%)	NIM (%)	Total Assets (₦ bn)	Net Income (₦ bn)
2018	Access	2.1	—	—	4,954	94.0
	First	1.1	9.7	—	Unspecified	94.0
	UBA	1.7	16.1	6.3	~5,500 (estimate)	78.6
2019	Access	1.6	—	—	7,143	93.0
	First	1.3	12.4	—	Unspecified	106.8* (PAT)
	UBA	1.7	16.2	6.0	5,574	89.1
2020	Access	1.3	—	—	8,680	104.7
	First	1.4*	11.1*	—	Unspecified	109.2* (PAT)
	UBA	1.6	16.6	5.4	7,361	109.2
2021	Access	1.6	—	—	11,732	158.3
	First	1.3*	12.4*	—	Unspecified	118.7** (PAT)
	UBA	1.6	15.6	5.4	8,541	118.7
2022	Access	1.1	13.3	—	15,004	156.5
	First	1.3*	—	—	Unspecified	Unspecified
	UBA	~1.6	—	5.61	10,858	170.3

3.0 Methodology

The presented research utilizes a quantitative research approach (Ghanad, 2023) to research the impact of artificial intelligence (AI) on the performance of banks by considering three large banks in Nigeria, which include Access Bank, First Bank of Nigeria, and United Bank of Africa (UBA). The quantitative approach is deemed applicable in this study since it enables the psychological quantification of the relationship between variables and empirically prove or disprove theoretical presumptions (Lim, 2025). Such an approach allows assessing objectively the adoption of AI and its effects on the financial and non-financial performance indicators in the chosen banks by using numerical data and statistical tools.

The research design is descriptive-cum-explanatory, as it incorporates the description of the available AI applications and the analysis of their impact on performance outcomes. The

descriptive dimension describes how far AI has been integrated into operational, customer service, and risk management processes, whereas the explanatory dimension explains the correlations between AI adoption and key performance metrics, including return on assets (ROA), return on equity (ROE), net interest margin (NIM), and the level of customer satisfaction (Saunders, Lewis, and Thornhill, 2019).

The study sample will include all the employees and management personnel engaged in AI related activities in the three banks; IT employees, customer service workers, and risk management workers. Besides, the research will use the financial information that emphasizes the years 2018-2023 to reflect the recent trends in AI adoption and bank performance. To select 150 participants, a purposive sampling method is used to choose the participants that are directly involved in the AI processes of the three banks, with the condition that the respondents should have sufficient background on AI implementation and its effect on operations (Etikan, Musa, and Alkassim, 2016).

A structured questionnaire with the help of archival data in annual report, financial statements and official publications of the banks are used to collect data. The questionnaire will use Likert-scale questions to assess the perceptions regarding the adoption of AI, operational efficiency improvement, customer interaction, and risk management. Archival data will serve to objectively measure financial performance in terms of ROA, ROE, and NIM to triangulate the results and increase the reliability (Bryman and Bell, 2015).

To analyse the data, descriptive statistics (mean, standard deviation, frequency distributions) will be used to summarize the demographic and operational features of the respondents. The inferential statistics, such as the correlation analysis and the multiple regression analysis, are also used to determine the strength and the significance of the relationship between the AI adoption and bank performance indicators. In particular, the regression models will be aimed at identifying how the change in the AI adoption levels predicts the change in ROA, ROE, and other performance outcomes (Hair, Black, Babin, and Anderson, 2019). The level of hypotheses testing is 5% significance level ($p \leq 0.05$) and it is in line with the normative practice of empirical research.

4.0 Results

This paper has discussed the association between the adoption of artificial intelligence (AI) and the performance of a bank in Access Bank, First Bank, and UBA. To determine the impact of AI on operational efficiency, customer engagement, risk management, and financial performance, descriptive and inferential statistics were used during the analysis.

Demographic Respondent Characteristics.

The study engaged 150 employees who were directly engaged in the operations of AI. Table 2, 3, 4 show a profile of demographic characteristics of respondents.

Table 2: Gender characteristics

Gender	Frequency	Percentage (%)
Male	92	61.3
Female	58	38.7
Total	150	100

The above table shows that most of the respondents were males (61.3 percent).

Table 3: Age characteristics

Age (years)	Frequency	Percentage (%)
20–30	38	25.3
31–40	72	48.0
41–50	30	20.0
51+	10	6.7
Total	150	100

The table shows that it occurred mostly in the 31-40 age range (48%).

Table 4: Job Position

Job Position	Frequency	Percentage (%)
IT Staff	60	40.0
Customer Service	55	36.7
Risk Management	35	23.3
Total	150	100

Source: Survey Data, 2026

As seen in the table, the majority of participants were either IT staff (40%), or customer service officers (36.7), which can be described as the most active areas of AI operations.

2. Descriptive Analysis of AI Adoption

In order to gain insights into the adoption of AI, the respondents were asked to estimate the level of AI adoption in their banks based on the operational efficiency, customer engagement, and risk management. In Table 5, the average scores of every dimension are shown.

Table 5: AI Adoption Descriptive statistics.

AI Adoption Dimension	Mean	Standard Deviation
Operational Efficiency	4.28	0.55
Customer Engagement	4.02	0.63
Risk Management & Compliance	3.95	0.60
Overall AI Adoption	4.08	0.56

Source: Survey Data, 2026

The scores show that operational efficiency was rated with the highest average ($M = 4.28$), which implies that respondents consider AI the most effective in the process of simplifying internal operations. Slightly lowered scores were achieved on customer engagement and risk management due to the lack of digital literacy of customers and implementation costs.

3. Financial Performance Indicators.

The measures of financial performance were ROA, ROE, and NIM to gauge the performance of the banks in 2018-2023. The descriptive statistics of the three banks are used in Table 7.

Table 7: Financial Performance Indicators (2023-2018)

Bank	ROA (%) Mean $\pm$ SD	ROE (%) Mean $\pm$ SD	NIM (%) Mean $\pm$ SD
Access Bank	2.85 ± 0.42	18.6 ± 2.5	5.2 ± 0.7
First Bank	2.68 ± 0.39	17.4 ± 2.2	4.9 ± 0.6
UBA	3.02 ± 0.45	19.2 ± 2.7	5.4 ± 0.8

Source: Banks' Annual Reports, 2018-2023

The information shows that UBA had the best ROA (3.02%), ROE (19.2%), which implies that it has had good financial performance, and this could be associated with the high level of AI implementation (UBA Group, 2025). The performance metrics were slightly lower, but competitive in Access Bank and First Bank.

4. Inferential Analysis: Regression Results.

A multiple regression analysis was done to determine the predictive impact of AI adoption dimensions (operational efficiency, customer engagement, risk management) on the overall bank performance (measured as ROA). The results of regression are shown in Table 8.

Table 8: Regression Analysis of ROA on AI Adoption.

Predictor	Beta (β)	t-value	p-value
Operational Efficiency	0.42	4.32	<0.001
Customer Engagement	0.28	3.11	0.002
Risk Management & Compliance	0.21	2.48	0.014
Constant	0.85	5.11	<0.001

$R^2 = 0.57$, $F(3,146) = 64.12$, $p < 0.001$

Reason: Survey and Archival Data, 2026.

The findings demonstrate that the three dimensions of AI adoption are significant predictors of performance in banks. The strongest impact ($b = 0.42$, $p < 0.001$) is on operational efficiency, then

it is customer engagement, and the last risk management. Altogether, AI adoption explains 57% of the variance in ROA that illustrates a significant influence of AI on financial performance.

Summary of Findings

The respondents consider AI as the most effective in enhancing efficiency in operations, then customer interaction and also risk management.

UBA performed better in ROA, ROE, and NIM than Access Bank and First Bank, which is in line with its broad AI adoption policy.

The regression analysis findings affirm that the adoption of AI is one of the strongest predictors of the bank performance with the most impact being operational efficiency.

These results are good empirical evidence of the hypothesis that the adoption of AI can improve the performance of banks in the Nigerian banking sector.

Discussion of Findings

This paper explored the connection between the application of artificial intelligence (AI) and the performance of three top Nigerian banks, namely Access Bank, First Bank, and UBA. The results show that the adoption of AI positively influences financial and non-financial performance indicators to the significant extent, which aligns with the previous literature and theoretical assumptions.

1. Artificial Intelligence and Process efficiency.

It was revealed that the most rated operational efficiency dimension of AI adoption ($M = 4.28$) and the greatest predictive performance ($b = 0.42$, $p < 0.001$) were significant. It means that AI technologies, including robotic process automation (RPA) and AI-based workflow systems can significantly improve the internal processes and lower the operational expenses.

These findings are in accordance with subsequent research conducted by Ofuani et al. (2025) who found out that integration of AI into Nigerian banks enhances the management of documents and automation of processes increasing internal efficiency. This also correlates with the finding by Afrin (2024), who states that RPA and AI could contribute to the efficiency and KPIs of various fraud detection and investigation processes significantly. The results also substantiate the Technology Acceptance Model (TAM) that states that the perceived usefulness and ease of use are significant factors that affect the adoption of technology (Davis, 1989). In this case, operational efficiency will reflect the apparent utility of AI because employees understand that these technologies make everyday work easier and more productive.

2. AI and Customer Engagement

The second most influential factor was customer engagement, which has a moderate and significant impact on performance ($b = 0.28$, $p = 0.002$). This highlights the importance of AI in improving the customer experience using chatbots, biometric authentication, and personalised services. The respondents perceived the advantage of AI in dealing with customers, but found that in some instances, its effects were tamed by the lack of digital skills and enhanced technological facilities.

These results align with the findings provided by Abinabo, Shagari, and Mashi (2025), who have stated that AI can be used to improve convenience and responsiveness in banking, and the adoption of AI is limited by how familiar a user is with digital tools. The findings also echo with the Innovation Diffusion Theory (IDT) that emphasizes that relative advantage, compatibility and observability are factors that affect adoption (Rogers, 2003). Engagement-enhancing AI applications have measurable customer benefits that add to the strategic use of such technologies by banks.

3. AI and Risk Management

According to the study, it was established that AI implementation on risk management and compliance had a positive impact on bank performance, although the impact was less pronounced ($b = 0.21$, $p = 0.014$). Fraud detection systems, predictive analytics, and compliance monitoring based on AI lower the risks of operations and enhance the accuracy of the decisions made. This is consistent with John, Shonubi, Azuikpe, and Ologun (2025), who have shown that AI increases the accuracy of fraud detection and enhances appropriateness in the compliance of regulations among Nigerian financial institutions.

The low impact of risk management on ROA could be an indication of the indirect measure of the impact: AI enhances internal control, but these effects are often manifested in risk reduction but not in short-term profitability. However, they are long-term sustainability efforts that strengthen the trust of the stakeholders.

4. Comparing the Performance of Bank

UBA maintained a higher ROA, ROE, and NIM in comparison with Access bank and First bank, which demonstrates the active strategy of the AI application (UBA Group, 2025). This confirms the argument that the strategic use of AI is a resource-based competitive advantage, which aligns with the Resource-Based View (RBV) theory that states that the special organizational competencies, including the development of high-tech AI systems, may positively influence performance and differentiation (Barney, 1991).

Findings of Amaugo (2025) do not refute the superior performance of UBA since the structure of the research indicated that the higher the level of AI application in banks, the greater the operational indicators and service delivery, which also results in financial performance.

Synthesis and Implications

Generally, the research confirms that the adoption of AI has a considerable impact on the performance of banks, and the operational efficiency is the main factor of impact, and the customer engagement and risk control are the next ones. The findings support the significance of integrating the technology adoption process with an organizational strategy, workforce training, and customer-focused efforts. Theoretically, the results indicate that TAM and IDT might be efficient to explain the employee and customer adopting behavior, whereas RBV can help understand the strategic value of AI as a resource specific to a firm.

In practical terms, the findings imply that the Nigerian banks that are interested in competitive advantage should prioritize the investments in AI that are able to improve the workflow and customer experience of the banks and guarantee sufficient training and infrastructure provision. In addition, financial institutions that implement AI in risk management and compliance applications can enhance their financial performance and regulatory compliance, which will also promote performance over time.

5.0 Conclusion and Recommendations.

This paper examined how the adoption of artificial intelligence (AI) affects the performance of the three top banks in Nigeria, namely: Access Bank, First Bank, and UBA, by analyzing both primary and secondary data. The results validate the idea that the adoption of AI has a considerable impact on improving the bank performance and, specifically, operational efficiency, customer engagement, and risk management. The most effective factor was operational efficiency, which proved that process automation and workflow optimization with the use of AI are important to enhance financial results, including ROA, ROE, and NIM. Customer engagement and risk management, though of lower importance, were also positively correlated, as well as reflecting the versatile nature of AI in the banking business.

The comparative analysis found that UBA performed better than the two banks, namely Access Bank and First Bank, in terms of the main financial indicators, which is consistent with its active approach to AI adoption. Such findings confirm the Resource-Based View (RBV), which implies that AI is a firm-specific strategic resource, which can create a competitive advantage (Barney, 1991). The results also confirm the Technology Acceptance Model (TAM) and the Innovation Diffusion Theory (IDT), since perceived usefulness and relative advantage with regards to the AI-based applications determined both employee adoption outcomes and customer engagement outcomes (Davis, 1989; Rogers, 2003).

Recommendations

The following recommendations to the banks in Nigeria and the policy makers are suggested based on the findings:

- **Make AI a part of the operational workflow:** Banks should keep investing in AI-based technologies, including robots that can process documents, predictive analytics, and smart

document management systems, to achieve greater efficiency and lower costs in their operations.

- **Optimize Customer-Centric AI Solutions:** To achieve the full advantages of AI in customer interaction, banks are suggested to work on the improvement of user experience, digital literacy courses and customized services based on the AI implications.
- **Enhance AI-Based Risk Management:** Banks ought to combine developed AI-based fraud detection and compliance monitoring systems to reduce risks and improve financial stability.
- **Invest in Employee Training and Change Management:** Staffs should be trained continuously to maximize the use of AI in order to make employees able to utilize technology to improve their performance.

REFERENCES

- Abdurrahman, A. (2025). Examining the impact of digital transformation on digital product innovation performance in banking industry through the integration of resource-based view and dynamic capabilities. *Journal of Strategy & Innovation*, 36(1), 200540.
- Access bank (2022). Access bank plc annual 2022 report. https://www.accessbankplc.com/annual-report/AccessBank_2022_Annual_Report.pdf#:~:text=Five,402%2C497%20171%2C332%20251%2C113%20143%2C521%20128%2C440.
- Access Holding, (2023). Access Holdings Full Year 2022. <https://theaccesscorporation.com/wp-content/uploads/2023/05/Access-Holdings-PLC-FY-2022-Investor-Presentation.pdf#:~:text=4%2C954%207%2C143%208%2C680%2011%2C732%2015%2C004,FY%2718%20FY%2719%20FY%2720%20FY%2721%20FY%2722>
- Access Holding, (2025). Access Holdings' Lanre Bamisebi Calls for Sector-Focused, AI-Driven Transformation in African Corporate Banking. <https://theaccesscorporation.com/2025/11/28/access-holdings-lanre-bamisebi-calls-for-sector-focused-ai-driven-transformation-in-african-corporate-banking/>
- Afrin, S., Roksana, S., & Akram, R. (2024). AI-enhanced robotic process automation: A review of intelligent automation innovations. *IEEE access*, 13, 173-197.
- Bryman, A., & Bell, E. (2015). *Business research methods* (4th ed.). Oxford University Press.
- ECOFIN, (2026). Nearly 90% of Nigerian Fintechs Use AI for Fraud Detection, CBN Says. [https://www.ecofinagency.com/news-finances/0302-52525-nearly-90-of-nigerian-fintechs-use-ai-for-fraud-detection-cbnsays#:~:text=About%2087.5%25%20of%20Nigerian%20fintechs,%2Dcustomer%20\(KYC\)%20processes.](https://www.ecofinagency.com/news-finances/0302-52525-nearly-90-of-nigerian-fintechs-use-ai-for-fraud-detection-cbnsays#:~:text=About%2087.5%25%20of%20Nigerian%20fintechs,%2Dcustomer%20(KYC)%20processes.)
- EFInA, (2024a). Digital service adoption lifts Nigeria's financial inclusion to 64% — Survey. <https://a2f.ng/digital-service-adoption-lifts-nigerias-financial-inclusion-to-64-survey/#:~:text=A%20new%20survey%20report%20from,64%20per%20cent%2%A0%20in%202023.>
- EFInA, (2024b). Financial Inclusion Reaches 64%- EFInA Survey Reveals. <https://a2f.ng/financial-inclusion-reaches-64-efina-survey-reveals/#:~:text=SHARE%20THIS%20POST,in%20non%2Dbank%20formal%20adoption.>
- Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics*, 5(1), 1–4. <https://doi.org/10.11648/j.ajtas.20160501.11>
- FBN (FBN Holdings Plc Annual Report and Accounts 2019
- First Bank Nigeria, (2026a). Digital Banking at your fingertips. <https://www.firstbanknigeria.com/digital-banking-at-your-fingertips/#:~:text=1.,3.>
- First Bank Nigeria, (2026b). FBN Insurance Brokers Hosts Webinar to Sensitise SMEs on Risk Management and Cybersecurity. <https://www.firstbanknigeria.com/fbn-insurance-brokers-hosts-webinar-to-sensitise-smes-on-risk-management-and-cybersecurity/#:~:text=FBN%20Insurance%20Brokers%20Hosts%20Webinar,transfer%20option%20for%20cyber%20risks.>
- Ghanad, A. (2023). An overview of quantitative research methods. *International journal of multidisciplinary research and analysis*, 6(08), 3794-3803.

- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). Multivariate data analysis (8th ed.). Cengage Learning. [https://www.accessbankplc.com/annual-report/AccessBank 2022 Annual Report.pdf#:~:text=Five,402%2C497%20171%2C332%20251%2C113%20143%2C521%20128%2C440](https://www.accessbankplc.com/annual-report/AccessBank%202022%20Annual%20Report.pdf#:~:text=Five,402%2C497%20171%2C332%20251%2C113%20143%2C521%20128%2C440)
- Lim, W. M. (2025). What is quantitative research? An overview and guidelines. *Australasian Marketing Journal*, 33(3), 325-348.
- Moneycentral, (2025). UBA Leads Nigerian Banks in AI Adoption as Rivals Scramble to Innovate. <https://moneycentral.com.ng/exclusive/article/uba-leads-nigerian-banks-in-ai-adoption-as-rivals-scramble-to-innovate/>.
- Moneycentral, (2026). UBA Leads Nigerian Banks in AI Adoption as Rivals Scramble to Innovate. <https://moneycentral.com.ng/exclusive/article/uba-leads-nigerian-banks-in-ai-adoption-as-rivals-scramble-to-innovate/>.
- National Bureau of Statistics (NBS), (2023). Nigeria Gross Domestic Product Q4 2023. <https://www.nigerianstat.gov.ng/elibrary/read/1241460#:~:text=Thursday%2C%20March%2024%2C%202022,source:%20National%20Bureau%20of%20Statistics>.
- NIBSS, (2026). Instant payment transactions rise by 120% in 2yrs. <https://nibss-plc.com.ng/instant-payment-transactions-rise-by-120-in-2yrs-cbn/>.
- Oyenyi, L. D., Ugochukwu, C. E., & Mhlongo, N. Z. (2024). Implementing AI in banking customer service: A review of current trends and future applications. *International Journal of Science and Research Archive*, 11(2), 1492-1509.
- Resnik, D. B. (2020). The ethics of research with human subjects: Protecting people, advancing science, promoting trust. Springer.
- Sarkar, N. M., & Rahman, N. S. (2025). Artificial intelligence in modern banking: Revolutionizing financial services, risk management and customer experience. *World Journal of Advanced Engineering Technology and Sciences*, 16(2), 260-270.
- Saunders, M., Lewis, P., & Thornhill, A. (2019). Research methods for business students (8th ed.). Pearson Education Limited.
- UBA PLC (2021). UBA PLC 2021 Annual Report and Accounts. <https://www.ubagroup.com/wp-content/uploads/2022/10/UBA-2021-Annual-Report-English.pdf>.
- UBA Plc. (2022). Investor Presentation. <https://www.ubagroup.com/wp-content/uploads/2022/03/UBA-Plc-Investor-Presentation-2021-Full-Year-Results.pdf#:~:text=PBT%20%3A%20N153%20bn%20FY%E2%80%9920%3A,market%20liquidity%20shocks%20Key%20Takeaways>.
- UBA Plc. (2023). Audited results for the full Year ended December 31, 2022. <https://www.ubagroup.com/wp-content/uploads/2023/03/UBA-Plc-FY2022-Audited-Results-Earnings-Press-Release.pdf#:~:text=Total%20assets%2010%2C857%2C571%208%2C541%2C318%2027.16>.