

# Examining the Role of AI in Balancing Innovation and Trust within the Banking Sector: A Survey of Bank Customers in Abia State, Nigeria

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**Abstract:** *The study examined the role of AI in balancing innovation and trust within the banking sector, using bank customers in Abia State, Nigeria as a case study. The study specifically focused on striking a balance between the transformative potential of AI and the necessity of ensuring data privacy and security towards building bank customers trust. For the investigation, the cross-sectional descriptive design was utilized. Among banks customers in Abia State, 228 respondents were chosen as the sample size. The technique used was Basic Random Sampling. Only the questionnaire was utilized to collect information from the respondents. The study's findings were presented, examined over, and discussed using descriptive statistics (frequency tables and percentages) and inferential statistics (linear regression) for assessing and testing the hypotheses, respectively. Based on the hypotheses' tests and interpretation, results revealed that there is a positive relationship between the integration of AI technologies and consumer skepticism in the banking sector ( $p=0.000$ ;  $p < 0.005$ ). However, Artificial intelligence (AI) technologies have a positive relationship with data governance frameworks towards banking services operations in Abia State ( $p=0.000$ ;  $p < 0.005$ ). Again, AI technologies have a positive relationship with consumer trust in the banking system ( $p=0.000$ ;  $p < 0.005$ ). Since bank consumers express skepticism toward AI-driven services, fearing the potential misuse of their sensitive financial information and, banks' inability to fully exploit AI's capabilities, resulting in diminished customer trust in this study, banks should prioritize the establishment of strong data governance policies that clearly define data usage, privacy protections, and compliance with regulatory standards. This will help to mitigate consumer concerns regarding the misuse of their sensitive information and enhance overall trust in AI-driven services.*

**Keywords:** *Artificial Intelligence (AI), Innovation, Trust, Bank, Customers, Data governance, Skepticism, Technologies.*

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## 1.0 INTRODUCTION

Artificial Intelligence (AI) has emerged as a transformative force within the banking sector, reshaping consumer behaviour and marketing strategies, particularly in regions like Nigeria. As banks integrate AI technologies into their operations, it has become essential to understand how these innovations affect customer engagement, service delivery, and overall trust (Ogunyemi & Adediji, 2021). In an environment where competition is intensifying and customer expectations are evolving, AI offers a significant opportunity for banks to improve the customer experience, foster loyalty, and drive financial inclusion

(Akinyemi & Adeyemi, 2023). AI-driven tools, such as chatbots, personalized recommendation systems, and predictive analytics, enable banks to gain deeper insights into consumer behaviour. These insights allow for more targeted and tailored marketing strategies, as AI processes vast amounts of consumer data to craft personalized experiences that meet individual needs (Kumar et al., 2020). In Nigeria, where access to banking services can be inconsistent, AI technologies offer a way to bridge gaps by providing personalized and accessible banking solutions that cater to the specific needs of underserved populations (Okwu, 2021). This capability plays a critical role in advancing financial inclusion, ensuring that banking services are not only more accessible but also more relevant to local customers.

In addition to enhancing customer engagement, AI plays a pivotal role in strengthening consumer trust, particularly in the areas of fraud detection and risk management. McKinsey (2021) highlights how AI can significantly reduce the risk of transaction fraud, which is a major concern for consumers in digital banking environments. By implementing advanced AI-driven security measures, banks can bolster customer confidence, which, in turn, encourages greater engagement with digital banking services. These advancements in fraud detection are part of a broader trend where AI not only streamlines banking operations but also creates safer and more secure environments for consumers to conduct transactions. As banks leverage AI to enhance both efficiency and security, they foster a sense of reliability and trust that is crucial for long-term customer loyalty.

Despite these advantages, the adoption of AI in the banking sector is not without its challenges, particularly when it comes to balancing innovation with trust. In Nigeria, many consumers express skepticism towards AI technologies, often citing concerns about data privacy and security (Iwuanyanwu, 2022). The adoption of AI in Nigerian banking presents concerns over the security of sensitive financial data, with fears of misuse or inadequate protection of personal information. This skepticism could slow the widespread acceptance of AI, indicating that Nigerian banks need to adopt a transparent approach to ease these concerns. By emphasizing data privacy, educating customers about how their data is used, and communicating security measures, banks can help alleviate fears and promote greater trust in AI-powered banking services (Olorunnisola, 2020). As AI becomes more embedded in banking operations, it introduces complexities that demand careful management. While AI can streamline processes, cut costs, and enhance customer service, it also requires strong data governance frameworks to ensure compliance with Nigeria's data protection laws, like the NDPR (Nigeria Data Protection Regulation) (Akinyemi, 2022). Banks must balance innovation with ethical responsibility, setting clear guidelines and accountability mechanisms to prevent misuse of AI and safeguard customer interests (Okoye & Chike, 2021). Ethical practices will be key in ensuring AI technologies serve the people responsibly (Njoku, 2023). It

### 1.1 Statement of Problem

The integration of Artificial Intelligence (AI) in the banking environment of Abia State Nigeria poses a complex problem. On one hand, AI technologies promise to enhance customer engagement, improve service delivery, and boost operational efficiency. On the other hand, they raise significant concerns about data privacy and security. Many consumers express skepticism toward AI-driven services, fearing the potential misuse of their sensitive financial information. This skepticism can hinder banks' ability to fully exploit AI's capabilities, resulting in diminished customer trust and engagement.

Moreover, the financial environment in Abia State Nigeria is marked by limited banking access and infrastructural obstacles. While AI has the potential to deliver personalized banking experiences, the absence of strong data governance frameworks raises the risk of non-compliance with privacy regulations, further intensifying consumer apprehensions. As banks increasingly depend on AI for decision-making and customer interactions, the need for ethical guidelines and accountability mechanisms becomes crucial.

Thus, the challenge lies in striking a balance between the transformative potential of AI and the necessity of ensuring data privacy and security towards building customer trust. This balance is vital for shaping the overall consumer experience and trust in the banking system in South East States, particularly Abia State

Nigeria. Addressing these concerns is essential for banks to innovate responsibly while creating a secure and customer-centric environment.

### 1.2 Objectives of the Study

The general objective of the study was to examine the role of AI in balancing innovation and trust within the banking sector: A survey of bank customers in Abia State, Nigeria. The specific objectives were as follows:

- i. To assess the impact of AI technology integration on consumer skepticism in the banking sector.
- ii. To evaluate the effectiveness of AI in mitigating data governance frameworks toward banking services operations in Abia State.
- iii. To investigate the extent of relationship between AI technologies and the consumer trust in the banking system.

### 1.3 Research Questions

The following questions were relevant to the study:

- i. How does the integration of AI technologies affect consumer skepticism in the banking sector?
- ii. Has AI improved data governance frameworks towards banking services operations in Abia State?
- iii. To what extent does adoption of AI technologies in banking operations relate with the consumer trust in the banking system?

### 1.4 Research Hypotheses

The following null hypotheses were formulated to guide the study:

**H0<sub>1</sub>:** There is no positive relationship between the integration of AI technologies and consumer skepticism in the banking sector.

**H0<sub>2</sub>:** Artificial intelligence (AI) technologies has no positive relationship with data governance frameworks towards banking services operations in Abia State.

**H0<sub>3</sub>:** AI technologies has no positive relationship with consumer trust in the banking system.

## 2.0 LITERATURE REVIEW

The variables under investigation are reviewed conceptually, theoretically and empirically to harness the perceived gaps that the study aimed to fill. The concepts are discussed below.

### 2.1 Conceptual Review

#### Artificial Intelligence (AI)

The integration of AI technologies in the banking sector has revolutionized operations, enhancing both efficiency and customer experience. In South East Nigeria, banks have begun leveraging AI to streamline processes, mitigate risks, and personalize services. According to Okwuosa et al. (2021), the adoption of AI in banking facilitates improved decision-making, reduces operational costs, and enables better customer service through chatbots and predictive analytics. However, while innovation drives progress, it also raises concerns regarding trust among customers. A survey conducted by Eze et al. (2022) revealed that bank customers in South East Nigeria exhibit apprehension towards AI due to fears about data security and privacy. This sentiment aligns with findings from international studies, such as the one by McKinsey & Company (2020), which indicates that trust is a significant barrier to AI adoption in financial services globally. Customers prefer transparency in AI processes, underscoring the need for banks to foster a culture of trust through robust security measures and clear communication about AI usage. To strike a balance between innovation and trust, banks must prioritize ethical AI practices and involve stakeholders in the development process. Building a transparent framework for AI implementation will not only enhance customer confidence but also ensure sustainable growth in the sector. As the environment of banking evolves, fostering trust while driving innovation will be crucial for the successful integration of AI technologies.

#### Consumer Skepticism

Consumer skepticism toward AI-driven banking services has emerged as a significant challenge in the banking sector, particularly in Nigeria. Despite the potential benefits of artificial intelligence, such as enhanced efficiency and personalized services, consumers often express concerns about privacy, security, and the opacity of AI algorithms. Research indicates that trust is a critical factor in adopting new technologies, and in Nigeria, where banking fraud is a prevalent issue, skepticism is heightened (Abdulahi & Kauffman, 2021). Globally, studies show that trust in AI technologies varies significantly across regions. For instance, a survey by PwC (2020) revealed that while 73% of consumers in China are willing to engage with AI banking solutions, only 40% in the United States feel the same. This disparity highlights cultural attitudes toward technology and trust, which are also relevant in the Nigerian context. Many consumers remain wary of AI's decision-making processes, fearing that opaque algorithms may lead to unfair outcomes (Chaudhry et al., 2020). In Nigeria, the Central Bank's initiatives to promote digital banking and fintech innovations underscore the importance of building consumer trust. Efforts to enhance data protection regulations and improve transparency in AI-driven processes can help mitigate skepticism. Ultimately, balancing innovation and trust is crucial for the successful integration of AI in banking, as fostering consumer confidence will drive acceptance and usage (Ogunleye, 2022).

### **Data governance frameworks**

Data governance frameworks are essential for managing data integrity, privacy, and security, particularly in sectors like banking where trust and compliance are paramount. These frameworks provide structured approaches for organizations to establish policies, standards, and responsibilities for data management (Ladley, 2019). In the context of AI's impact on innovation and trust in the banking sector, effective data governance can help mitigate risks associated with the deployment of AI technologies. In Southeast Nigeria, where banks are increasingly adopting AI to enhance customer service and operational efficiency, customers express concerns about data privacy and ethical use of AI (Okonkwo et al., 2021). A robust data governance framework can address these concerns by ensuring transparency and accountability in how customer data is handled. It lays down guidelines for data quality, access controls, and compliance with regulations, which are vital in fostering customer trust (Haffke et al., 2016). Internationally, organizations like the Data Management Association (DAMA) provide best practices for data governance that can be adapted to local contexts, ensuring that banks in Southeast Nigeria not only innovate but also maintain customer confidence (DAMA, 2017). As AI continues to evolve, the integration of data governance frameworks will be crucial in balancing the dual imperatives of innovation and trust, ultimately enhancing customer satisfaction and loyalty in the banking sector.

### **Consumer Trust**

Consumer trust in the banking system is a crucial factor that influences financial stability and growth, particularly in regions like South East Nigeria. As banks increasingly adopt artificial intelligence (AI) technologies to enhance services and streamline operations, the challenge lies in balancing innovation with consumer trust. According to a study by Guo et al. (2020), the introduction of AI in banking can lead to improved customer experiences, but it also raises concerns about data privacy and algorithmic bias, which can undermine trust. In South East Nigeria, where financial literacy varies significantly, consumers may be wary of AI-driven systems that they do not fully understand (Ogbuehi et al., 2022). This apprehension is compounded by historical issues of fraud and mismanagement in the banking sector. To mitigate these concerns, banks must prioritize transparency in how AI systems operate and how consumer data is utilized. As highlighted by Yadav and Singh (2019), building trust through clear communication and education can foster a more favourable perception of AI technologies. Furthermore, international research indicates that trust in banking institutions is often built on consistent service delivery and responsiveness to consumer needs (Luhmann, 2018). In the context of South East Nigeria, this means not only innovating with AI but also ensuring robust customer support mechanisms are in place. By strategically integrating AI while addressing consumer trust concerns, banks can not only enhance their service offerings but also contribute to a more resilient banking ecosystem in the region.

### Nigeria Banking Industry

The Nigerian banking industry has undergone significant transformation in recent years, driven by advancements in technology and regulatory reforms. With the introduction of the Central Bank of Nigeria's (CBN) financial inclusion strategy, the sector has seen a surge in digital banking solutions, enhancing access to financial services (CBN, 2020). Major financial institutions like Access Bank, First Bank of Nigeria, Zenith Bank, United Bank for Africa (UBA), Guaranty Trust Bank (GTBank), and Fidelity Bank have been pivotal in this evolution. Additionally, non-financial institutions such as MTN Nigeria and Airtel Africa have entered the fintech space, providing mobile banking solutions that improve customer experiences and foster competition among traditional banks (Ogunyemi & Ojo, 2021). Despite these advancements, trust remains a critical issue, as customers often express concerns about data security and service reliability (Adeyemi, 2019). Institutions like the Nigerian Deposit Insurance Corporation (NDIC) and the Financial Reporting Council (FRC) play essential roles in enhancing trust through regulation and oversight. Furthermore, the integration of AI technologies can bolster security and improve service reliability by enabling real-time monitoring of transactions and detecting fraudulent activities. To ensure sustained growth, the banking sector must balance innovation with customer trust, addressing these concerns through robust security measures, transparent practices, and the strategic use of AI (Eze et al., 2022).

### The Role of AI in Banking Innovation

**i. Enhanced customer experience:** AI technologies, such as chatbots and personalized banking services, provide customers with efficient and tailored experiences. These innovations streamline transactions and improve customer engagement, making banking more accessible. For example, chatbots use natural language processing (NLP) to answer customer inquiries in real-time, allowing for quicker resolutions to common issues (Gnewuch et al., 2017). Furthermore, AI-driven personalized banking services analyze customer behaviour and preferences to recommend products and services suited to individual needs, improving customer satisfaction and loyalty (Li et al., 2020).

**ii. Fraud detection and security:** As stated by Amin et al., (2020), AI algorithms enhance security measures by analyzing transaction patterns to identify and mitigate fraudulent activities. This proactive approach not only safeguards customer assets but also instills confidence in the banking system. Machine learning models, such as anomaly detection systems, are particularly effective in identifying unusual patterns and flagging potentially fraudulent transactions before they occur. AI-driven fraud detection has become a critical part of banking security, with banks increasingly relying on these technologies to reduce financial crimes (Kumar & Chatterjee, 2019).

**iii. Data analytics and decision-making:** According to Aspris et al., (2020), banks leverage AI to analyze vast amounts of data, allowing for better risk assessment and credit scoring. This capability leads to more informed decision-making, enabling banks to offer customized financial products that meet the unique needs of customers in Nigeria. AI-powered analytics tools help banks assess creditworthiness by analyzing non-traditional data sources, such as mobile phone usage or social media activity, which are particularly useful in regions with limited access to formal credit histories. This approach enhances financial inclusion by providing access to credit for underserved populations (Olugbenga et al., 2019).

## 2.2 THEORETICAL FRAMEWORK

Several theories relate to examining the role of AI in balancing innovation and trust within the banking sector: A Survey of Bank Customers in Abia State, Nigeria. This study is based on the Technology Acceptance Model (TAM), particularly the Technology Acceptance Model (TAM) was proposed by Fred Davis in 1989. The Technology Acceptance Model (TAM) provides a framework for understanding how consumers in Abia State Nigeria's banking sector perceive and adopt AI-driven innovations. TAM posits that perceived ease of use and perceived usefulness significantly influence users' acceptance of new



technologies. In the context of AI in banking, consumers must navigate the delicate balance between innovation and trust.

As banks introduce AI for services such as personalized recommendations and fraud detection, consumers evaluate the technology's usefulness in enhancing their banking experience. However, trust becomes paramount; consumers must feel secure about how their data is used and protected. Marketing strategies must therefore align with these dual imperatives. Effective communication highlighting AI's benefits and robust data security measures can enhance perceived trustworthiness. By leveraging TAM, banks can design targeted campaigns that not only promote AI's advantages but also address consumer concerns, ultimately fostering acceptance and loyalty in an increasingly digital environment.

### 2.3 EMPIRICAL REVIEW

**Omoge, Gala, and Horky (2022) studied the influence of disruptive technologies, particularly AI-enabled customer relationship management (CRM) systems, on the banking industry in Nigeria.** Their research focused on how these technologies affect consumer acceptance and buying behaviour, mediated by customer satisfaction and service quality. They gathered quantitative data through face-to-face questionnaires from 400 customers across ten Nigerian banks. The findings indicate that technology usage positively influences service quality, customer satisfaction, and consumer buying behaviour. However, service quality did not significantly impact consumer buying behaviour. Additionally, the study highlights the negative effects of technology downtime common in emerging markets on technology usage, consumer behaviour, and customer satisfaction. Overall, the research underscores the importance of continuing to examine the implications of AI and technology in banking, particularly in relation to consumer experiences and perceptions.

**Lawrence, Chinonye, and Noluthando (2024) explore the transformative impact of Artificial Intelligence (AI) on banking customer service in their study.** They examine how AI is reshaping customer interactions and operational efficiency, supported by a thorough thematic analysis and literature review. The research highlights AI's evolution, current applications, and future potential, particularly in enhancing customer experience and tackling operational challenges. Utilizing both qualitative and quantitative methods, the study reveals significant improvements in customer service metrics and the rise of personalized banking experiences due to AI. It emphasizes the need for banks to address ethical and privacy concerns while adopting AI technologies. The conclusions advocate for a balanced approach, promoting ongoing research and ethical governance to responsibly harness AI's capabilities. Ultimately, the paper provides insights into how banks can judiciously integrate AI, emphasizing the convergence of technology and human ingenuity in redefining the banking environment.

**Andreas (2023) explores the impact of artificial intelligence (AI) on the banking industry, highlighting its rapid growth and transformative potential.** As AI gains acceptance across various sectors, it has significantly improved institutional performance and decision-making processes, often matching human capabilities. The financial services sector has notably adopted AI, positioning itself as a leader in technological innovation despite varying implementation levels across industries. This literature review defines AI, examines its current applications in banks, and assesses its effects on their performance. It also provides insights into the positive and negative implications of AI in the banking sector, particularly in India. This descriptive study draws from diverse sources, including journals, magazines, and websites, to compile relevant information on the subject.

**Kaur, Dharmadhikari, and Khurjekar (2024) conducted a study on customer perceptions and adoption of AI-driven initiatives in the Indian banking sector.** They highlight that technology is essential for growth, particularly in banking, which must leverage AI to reach both urban and rural customers. AI applications are vital in bringing previously underserved individuals into formal financial services, offering advantages like speed, security, cost-effectiveness, and customization. The study emphasizes the transition in banking through AI-enabled tools, including chatbots and mobile banking, enhancing efficiency and growth. Using

a structured questionnaire, the research aims to understand customer perceptions of AI products and services. Key findings indicate that AI tools must be user-friendly and gender-neutral to effectively attract customers and improve satisfaction. Ultimately, the insights gained will guide banks in refining their AI strategies to better serve their clientele.

**Lei (2024) examined how the interaction between artificial intelligence (AI) and consumer behaviour impacts corporate brand management and marketing strategies.** This study highlights that AI can enhance consumer experiences, providing valuable insights for improving brand management and marketing approaches. A gray multiple linear regression model was developed, integrating classical regression with gray system theory. Using a questionnaire, the research gathered data on consumer experiences and their effects on brand management and marketing strategies. The regression analysis revealed that corporate brand management is influenced by sensory, emotional, thinking, and personalized experiences, along with privacy concerns. Similarly, market strategy was affected by these experiences. The findings underscore the importance of AI-consumer interaction, emphasizing that leveraging AI can help companies better understand consumer needs, optimize brand management, and adapt marketing strategies effectively.

### 2.4 RESEARCH GAPS

Despite the pivotal role of AI in balancing innovation and trust within the banking sector: A survey of bank customers in Abia State, Nigeria, there remains notable gaps in existing research regarding the impact of AI's on balancing innovation and trust in the banking sector among bank customers in Abia State. This gap is characterized that no existing studies have focused explicitly on Abia State to investigate the role of AI in balancing innovation and trust within the banking sector. Most studies has either examined broader regional impacts or focused on other States without delving into the specific banking environment such as Abia State.

### 3.0 METHODOLOGY

Cross-sectional descriptive design was adopted. Primary data was obtained from respondents via a structured questionnaire administered. Secondary data was sourced from ABSU library, the researcher's library, and the internet. A straight forward random sample strategy was used to get answers from people with extensive understanding of the topic. The bank customers in South East were chosen using a multistage sampling procedure. A multistage sample technique was used to choose the 228 customers in the three senatorial districts of Abia State – Abia North (Isuikwuato LGA: Achara, Imenyi) Abia Central (Ikwoano L.G.A: Nnono-Oboro, Ariam-Usaka) and Abia South (Aba South LGA: Amanfuru, Eziukwu). There are two sections to the questionnaire. While Section B examined thematic problems deriving from the stated aims, Section A examined the demographic data. Based on the respondents' level of agreement or disagreement, each statement was rated. To ensure the questionnaire's validity, reliability, and suitability for the study, it was adjusted in compliance with the suggestions. The information was gathered using a face-to-face, standardized questionnaire. In a similar manner, copies of the questionnaire were collected by the researcher upon completion. The survey data were coded and arranged using the Statistical Package in Social Science (version 23.0). Utilizing descriptive statistics and metrics of central tendency, the data were analyzed. Tables were employed to arrange the data for effective and efficient analysis. Linear regressions in particular were utilized as an inferential statistical method to assess the hypotheses.

### 4.0 DATA PRESENTATION, ANALYSIS AND INTERPRETATION

Data analysis and result presentation for the study and discussions are covered in this chapter. In order to create a more logical and insightful picture from the data the researcher collected, the field results were structured using descriptive statistics (frequency distribution tables and percentages) and inferential statistics (linear regressions).

**Table 4.1 Gender of the respondents**

Items	Frequency	Percentage
Male	132	58
Female	96	42

**Source: Field Survey, 2024**

The 4.1 shows that 132(58.0%) respondents were males while, 96(42.0%) were females. Suggesting that majority of the respondents were males.

**Table 4.2: Age bracket of the respondents**

Items	Frequency	Percentage
18 – 25 years	48	21
26 – 35 years	65	29
36 – 45 years	56	25
46 years and above	39	17

**Source: Field Survey, 2024**

Table 4.2 revealed that 48(21.0%) respondents were between the age of 18 and 25, 65(29.0%) aged 26-35 years, 56(25.0%) aged 36 – 45 years while, 39(17.0%) were within the age bracket of 46 and above. This shows that the majority of the respondents were in the age category of 26-35 years.

**Table 4.3: Marital Status of the Respondents**

Items	Frequency	Percentage
Married	181	80
Single	44	19
Divorced	3	1

**Source: Field Survey, 2024**

Table 4.3 revealed that 181(80.0%) respondents were married, 44(19.0%) were single, while 3(1.0%) were divorced. This shows that the majority of the respondents were married.

**Table 4.4: Highest educational qualification of the respondents**

Items	Frequency	Percentage
O'Level/ND	35	15
HND/B.Sc	128	56
M.Sc and Ph.D	59	26
No formal education	6	3

**Source: Field Survey, 2024**

Table 4.4 showed that 35(15%) respondents were O'Level/ND holders, 128(56%) respondents were HND/B.Sc holders, 59(26%) respondents were M.Sc and Ph.D holders while, 6(3%) respondents had no formal educational degree qualifications. This shows that the majority of the respondents were HND/B.Sc degree holders.

## Test of Hypotheses

### Hypothesis 1

**Ho1:** There is no positive relationship between the integration of AI technologies and consumer skepticism in the banking sector.



**Table 4.5: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.886 <sup>a</sup>	.785	.784	.38061

a. Predictors: (Constant), Artificial Intelligence (AI) Technologies

**Table 4.6: ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	119.519	1	119.519	825.032	.000 <sup>b</sup>
	Residual	32.740	226	.145		
	Total	152.259	227			

a. Dependent Variable: Consumer skepticism

b. Predictors: (Constant), Artificial Intelligence (AI) Technologies

**Table 4.7: Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.145	.121		9.431	.000
	Artificial Intelligence (AI) Technologies	.790	.027	.886	28.723	.000

a. Dependent Variable: Consumer skepticism

The coefficient of determination ( $R^2$ ) indicates 78.5%. This demonstrates that the independent variable (Artificial Intelligence (AI) Technologies) explains up to 78.5% of the variance in the dependent variable (Consumer skepticism), leaving 21.5% to be accounted for by other factors. The adjusted  $R^2$  value of 78.4% further supports the model's explanatory power while accounting for the number of predictors used. The ANOVA results in Table 4.6 show that the regression model is statistically significant. The F statistic of 825.032, with a corresponding p-value of 0.000, indicates that the model significantly predicts consumer skepticism at the 5% level of significance. From Table 4.7, the coefficients reveal that the constant (intercept) is 1.145, and the coefficient for AI Technologies is 0.790. This suggests that for each unit increase in AI Technologies, consumer skepticism increases by 0.790 units, holding all else constant. The t-value of 28.723 and the p-value of 0.000 for AI Technologies indicate that this relationship is statistically significant. The estimated relationship for the model can thus be expressed using the ordinary least squares (OLS) estimator as follows:

$$CS = \alpha_0 + \alpha_1(AI) + \mu$$

The estimated relationship for the model is:

$$CS = 1.145 + 0.790(AI).$$

The AI technologies and the consumer skepticism are positively and significantly correlated ( $p=0.000$ ;  $p<0.05$ ). This implies that there is a positive relationship between the integration of AI technologies and consumer skepticism in the banking sector.

### Hypothesis Two

**Ho2:** Artificial intelligence (AI) technologies have no positive relationship with data governance frameworks towards banking services operations in Abia State.

**Table 4.8: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.896 <sup>a</sup>	.803	.802	.39053

a. Predictors: (Constant), Artificial Intelligence (AI) Technologies

**Table 4.9: ANOVA<sup>a</sup>**

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	140.251	1	140.251	919.583	.000 <sup>b</sup>
Residual	34.469	226	.153		
Total	174.719	227			

a. Dependent Variable: Data governance frameworks

b. Predictors: (Constant), Artificial Intelligence (AI) Technologies

**Table 4.10: Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.839	.125		6.735	.000
	Artificial Intelligence (AI) Technologies	.856	.028	.896	30.325	.000

a. Dependent Variable: Data governance frameworks

The coefficient of determination ( $R^2$ ) indicates 80.3%. This demonstrates that up to 80.3% of the time, the independent variable (Artificial Intelligence (AI) Technologies) has explained the dependent variable (Data governance frameworks), with the remaining 19.7% being attributed to other factors. The Adjusted R Square of 0.802 suggests that this model remains robust even when accounting for the number of predictors, indicating that AI Technologies explain 80.2% of the variations in data governance frameworks. The ANOVA findings in Table 4.9 indicate that the regression model is statistically significant and a strong predictor of the relationship between the variables. This is evident from the F-statistic value of 919.583, with a p-value of 0.000, which is less than the 0.05 threshold, confirming significance at the 5% level. From the Coefficients Table in Table 4.10, the model can be expressed using the OLS estimator as follows:

$$DGF = \alpha_0 + \alpha_1 AI + \mu.$$

The estimated relationship for the model is:

$$DGF = 0.839 + 0.856 AI,$$

where DGF represents data governance frameworks and AI represents AI technologies. This indicates that for each unit increase in AI Technologies, there is an estimated increase of 0.856 units in Data Governance Frameworks, holding all else constant. The AI technologies and the data governance frameworks are positively and significantly correlated ( $p=0.000$ ;  $p<0.05$ ). This implies that Artificial intelligence (AI) technologies have a positive relationship with data governance frameworks towards banking services operations in Abia State.

### Hypothesis Three

**H0<sub>3</sub>:** AI technologies have no positive relationship with consumer trust in the banking system.

**Table 4.11: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.907 <sup>a</sup>	.824	.823	.38003

a. Predictors: (Constant), Artificial Intelligence (AI) Technologies

**Table 4.12: ANOVA<sup>a</sup>**

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	152.343	1	152.343	1054.835	.000 <sup>b</sup>
Residual	32.640	226	.144		
Total	184.982	227			

a. Dependent Variable: Consumer trust

b. Predictors: (Constant), Artificial Intelligence (AI) Technologies

**Table 4.13: Coefficients<sup>a</sup>**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.657	.121		5.417	.000
Artificial Intelligence (AI) Technologies	.892	.027	.907	32.478	.000

a. Dependent Variable: Consumer trust

The coefficient of determination ( $R^2$ ) indicates 82.4%. This demonstrates that up to 82.4% of the variation in the dependent variable (consumer trust) can be explained by the independent variable (Artificial Intelligence (AI) Technologies), with the remaining 17.6% attributed to other factors. The adjusted  $R^2$  value of 0.823 further refines this estimate, accounting for the number of predictors in the model, and confirms that the linear model's variances in AI technologies explain 82.3% of the variations in consumer trust. The ANOVA findings in Table 4.12 indicate that the regression model is significant, providing a strong indication of the relationship between the variables. This is supported by the F-statistic value of 1054.835, which is significant at the 5% level ( $p < 0.005$ ). This suggests that AI technologies significantly contribute to explaining variations in consumer trust. The data from the Coefficients Table (Table 4.13) can be utilized to establish the regression equation.

The estimated relationship for the model is:

$CT = \alpha_0 + \alpha_1 AI$ , where CT represents consumer trust.

The coefficients yield the following model:

$CT = 0.657 + 0.892(AI)$ .

This indicates that for each one-unit increase in AI technologies, consumer trust is expected to increase by approximately 0.892 units, holding all else constant. The AI technologies and consumer trust are positively and significantly correlated ( $p=0.000$ ;  $p<0.05$ ). This implies that AI technologies have a positive relationship with consumer trust in the banking system.

### Discussion of Findings

The studies collectively reveal a nuanced relationship between AI integration and consumer skepticism. While AI technologies can enhance operational efficiency and customer experiences, they also raise concerns regarding reliability and privacy. Omoge et al. (2022) indicate that technology downtime adversely affects consumer perceptions, suggesting that while consumers appreciate the benefits of AI, skepticism can arise from negative experiences. This duality underscores the need for banks to not only implement AI solutions but also to actively manage consumer perceptions through transparent communication and responsive customer support.

The findings from Lawrence et al. (2024) and Andreas (2023) emphasize the importance of establishing robust data governance frameworks in the context of AI adoption. A positive relationship was observed between AI technologies and the development of data governance practices, particularly in managing customer data privacy and ethical concerns. As banks leverage AI for personalized services, the necessity for comprehensive data governance becomes critical. This governance framework must address regulatory compliance, data security, and ethical use of AI, thereby enhancing consumer trust and fostering a more positive customer relationship.

The review also highlights a strong correlation between AI technologies and consumer trust in banking services, particularly noted by Kaur et al. (2024). As AI applications become more user-friendly and accessible, they enhance customer engagement and satisfaction. The ability of AI-driven tools, such as

chatbots and personalized banking solutions, to streamline services and provide tailored experiences is likely to increase trust among consumers. However, this trust is contingent upon the banks' ability to address consumer concerns related to data privacy and the ethical implications of AI use, as emphasized by Lawrence et al. (2024). Ensuring that AI applications are perceived as beneficial and secure will be vital for fostering long-term customer relationships.

### 5.0 CONCLUSION AND RECOMMENDATIONS

#### 5.1 Conclusion

The integration of Artificial Intelligence (AI) in the banking sector of Abia State, Nigeria, presents both opportunities and challenges. While AI technologies can significantly enhance customer engagement and operational efficiency, concerns about data privacy and security have led to increased skepticism among consumers. This skepticism not only hampers the full potential of AI but also highlights the urgent need for robust data governance frameworks and ethical guidelines. Achieving a balance between leveraging AI's transformative capabilities and ensuring customer trust through data protection is essential for fostering a secure and customer-centric banking environment in the region.

#### 5.2 Recommendations

1. Banks should prioritize the establishment of strong data governance policies that clearly define data usage, privacy protections, and compliance with regulatory standards. This will help to mitigate consumer concerns regarding the misuse of their sensitive information and enhance overall trust in AI-driven services.
2. Banks should adopt transparent practices when utilizing AI technologies, including clear communication about how customer data is collected, processed, and used. Engaging customers in discussions about AI applications can demystify the technology and build trust, thereby reducing skepticism.
3. To address skepticism, banks should invest in educational initiatives aimed at informing consumers about the benefits and safety of AI technologies. Workshops, seminars, and digital content can help demystify AI and demonstrate its positive impacts on customer service and operational efficiency, ultimately fostering greater trust in the banking system.

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