ARTIFICIAL INTELLIGENCE AND CUSTOMER SERVICE DELIVERY OF COMMERCIAL BANKS IN RIVERS STATE



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Abstract

The study examined the application of artificial intelligence on customer service delivery in Nigerian commercial banks in a bid to enhance customer's service delivery. This study adopted the survey research design, prompting expert opinion on the subject matter. The study adopted the random sampling methods. The study enrolled 25 employees and customers from selected banks employing the simple percentages to analyze expert opinions. The study concludes that there is relationship between Chatboth and customer service delivery in commercial banks, artificial intelligence has very great extent in which it affects the management of customer complain in the banking sector, that there is relationship between artificial intelligence and customer account management, that artificial intelligence affects efficient service delivery in commercial banks to a great extent and that there is relationship between artificial intelligence and credit rating of customers in commercial banks. The study recommends that commercial Banks should focus on training auditors to keep pace with technological advances in artificial intelligence applications in service delivery, representing knowledge, and controlling the search for such evidence within databases. There should be improved Awareness in Artificial Intelligence technologies by employees and customers in the banking industry to foster better audit quality and banks should pay

more attention to giving customers many opportunities to develop and practice the application of artificial intelligence methods because of their importance in service delivery.

Keywords: Artificial Intelligence, Customer Service Delivery, Commercial Banks, Rivers State.

1.1 Introduction

Historically, the concept of artificial intelligence was traced to 1955 as a branch of Computer Science and focused on the science of making intelligent machines that could mimic the cognitive abilities of the human mind, such as learning and problem-solving. The adoption of artificial intelligence in different enterprises has increased due to the COVID-19 pandemic. Since the pandemic hit the world, the potential value of artificial intelligence has grown significantly. The focus of artificial intelligence adoption is restricted to improving the efficiency of operations or the effectiveness of operations. The strategic application of artificial intelligence technologies including machine learning, natural language processing and computer vision can drive meaningful results for banks, from enhancing employee and customer experiences to improving back-office operations (Yang, 2023).

The emergence of artificial intelligence in the banking sector marks a pivotal shift towards more efficient, secure, and customer-oriented services. Artificial intelligence integration into banking processes has not only revolutionized the way financial transactions are conducted but also significantly enhanced the sector's competitiveness by fostering innovation, agility, and scalability (Tad, Mohamed, Samuel, & Deepa, 2023). The profound impact of artificial intelligence on banking is evident in various facets, including improved fraud detection mechanisms, enhanced credit risk assessments, operational cost reductions, and the streamlining of compliance processes. Furthermore, the adoption of artificial intelligence technologies has been instrumental in adapting to the demands of technologically savvy customers, offering seamless mobile and e-banking experiences that meet the expectations for convenience and efficiency.

The integration of AI in banking has revolutionized customer service by offering personalized banking experiences, thereby making banking operations more efficient and successful (Jaiwant, 2021). Artificial intelligence innovations, being

an integral part of Industry 5.0, aim at harmonizing automation with human intelligence, thus facilitating a highly personalized customer journey with banks. This approach has not only improved service efficiency but also introduced a new era of customer service where the focus is on delivering financial offerings seamlessly. However, the digital transformation in the banking sector has led to increased consumer expectations. As banks innovate their customer service offerings through virtual agents like chatbots, it has been observed that customer engagement with these technologies is not at the expected rate (El-Gohary *et al.,* 2021). This discrepancy highlights the challenges banks face in aligning their digital transformation efforts with consumer expectations and experiences.

According to customer- centric theme titled "customer service blueprint" coined by twenty-six (26) articles, the focus on utilizing artificial intelligence to gain deeper insights into customer adoption of digital banking services is increasing. In the domain of artificial intelligence and Customer Adoption, which encompasses 11 articles, the focus is on utilizing artificial intelligence to investigate the challenges and incentives that influence the adoption of digital banking technologies by customers. Arif et al. (2020) utilized a neural network approach to identify barriers to the adoption of Internet banking by customers. Belanche et al. (2019) examined factors associated with the adoption of artificial intelligence - driven technologies in the banking sector, while Payne et al. (2018) investigated the motivators for using artificial intelligence -enabled mobile banking services. Additionally, bank marketers have recognized the potential of artificial intelligence in improving the segmentation, targeting, and positioning of their banking products and services. However, the artificial intelligence and Marketing sub-theme, covering nine articles, examines artificial intelligence use in marketing tasks like customer segmentation, product development models, and marketing campaign execution.

Smeureanu *et al.,* (2013) introduced a machine-learning approach for banking customer segmentation, while Schwartz et al. (2017) applied artificial intelligence to analyse resource allocation in targeted ads. Recently, there's been a growing interest in artificial intelligence impact on customer experience, as shown by Soltani *et al.* (2019) and Trivedi (2019). The artificial intelligence and Customer Experience sub-theme, with eleven articles, delves into artificial intelligence role in enhancing customer experience in banking services. Trivedi (2019) showcases the effect of chat-bots in banking on customer experiences. Despite significant

progress in understanding artificial intelligence role in digital banking adoption, marketing, and customer experience, the ethical implications of artificial intelligence in banking are still largely unexplored. Investigating this area could reveal the long-term effects of artificial intelligence on customer trust and loyalty and how artificial intelligence can be integrated with new technologies to create more personalized and seamless banking experiences.

1.2 Statement of the Problem

The evolution of customer service in the banking sector has been significantly influenced by the advent and integration of Artificial Intelligence. This transformation is rooted in the banking industry's growing emphasis on consumer needs, particularly those of technically knowledgeable consumers who interact regularly with cutting-edge innovations (Kumar & Gupta, 2023). These consumers expect banks to provide seamless experiences across various operations, including digital money transactions, e-banking and real cash transfers. To meet these demands, financial institutions have expanded their industrial landscape to incorporate elements from retail, IT and telecom sectors, thereby enhancing the accessibility of banking services to consumers at any time and from anywhere.

The integration of Artificial Intelligence into the banking sector heralds a transformative era, promising unprecedented efficiency and customer service improvements. However, this integration is not without its challenges and limitations. Ghandour (2021) provides a comprehensive systematic literature review identifying key opportunities alongside significant hurdles, such as job displacement, privacy concerns and the loss of human touch in customer interactions. These challenges underscore the complexity of artificial intelligence adoption in banking, necessitating strategic approaches to mitigate potential downsides. This paper therefore presents the relationship between artificial intelligence and customer service delivery in Rivers State.

The study answered the following research questions:

i. What is the relationship between chatboth and Customer Service Delivery in Commercial Banks?
ii. To what extent does artificial intelligence affect management of customer complains?
iii. Is there any relationship between artificial intelligence and customer account management?

iv. To what extent does artificial intelligence affects efficient service delivery in commercial banks?
v. Is there any relationship between artificial intelligence and credit rating of customers in commercial banks?

2.0 Review of Related Literature

According to Bitner *et al.,* (2008), the effectiveness of a service blueprint hinges on customer prioritization and the strategic design of steps based on data and expertise. This model equips banking experts, marketers, and researchers with a deep understanding of the customer journey, highlights AI's impact, identifies research areas, and uncovers growth opportunities in the industry. It consists of four key components: the customer journey, front-stage, back-stage, and support processes. The customer journey maps out the steps customers take when seeking credit solutions, forming the blueprint's base. The front-stage encompasses interactions with banking touch points, such as AI-driven interfaces like chat-bots. Back-stage activities support the customer-facing front-stage operations, while support processes facilitate smooth internal organizational interactions and back-stage functionality. Importantly, AI enhances bank users' decision-making by improving their navigation through various stages of their journey.

According to Broby (2021) the customer journey in the banking sector begins with the acquisition phase, followed by credit decision-making and post-decision activities. The primary goal of the acquisition phase is to attract visitors to the bank's website and convert them into active users. This is achieved through front-stage activities such as personalized targeted advertising. Supporting this approach, Schwartz *et al.* (2017) suggested a multi-dimensional strategy for retail banks to enhance customer acquisition by balancing the learning from advertising data with the optimization of advertising expenditures. During this stage, AI plays a crucial role in understanding customer adoption behaviours in banking. Machine learning techniques are used to improve segmentation efforts by identifying factors that influence online adoption. Sharma *et al.* (2017) employed a neural network approach to analyse factors affecting mobile banking adoption. Similarly, Payne *et al*. (2018) examined the comfort and attitudes of digital natives towards AI-enabled mobile banking services. This aligns with the perspective of Markinos and Daskalaki, (2017) who argued that machine learning allows banks to categorize customers based on their reactions to advertisements.

During the credit application phase on a bank's website, the main goal is to turn visitors into applicants. The use of robot-advisors plays a vital role in helping customers choose a credit option that fits their needs and qualifications (Hasan, 2021; Herrmann & Masawi, 2022). These advisors gather basic personal financial information, quickly confirm it with credit bureaus, and enhance service offerings while directing customers to suitable options. Trivedi, (2019) highlights the significance of information, system, and service quality in providing a smooth customer experience with chat-bots, with personalization serving as a moderating factor. This is because robot-advisors offer both task-oriented functions, such as checking bank accounts, and problem-solving functions, like processing credit applications. The collected data is analysed using machine learning to continuously improve offerings and enhance the overall customer experience. Following the research of Jagtiani and Lemieux, (2019), machine learning is used to optimize data from various sources, enabling the creation of well-informed and comprehensive credit recommendations. While this proposed process offers significant benefits to customers and banks, it is important to note that many customers are hesitant to share their information. Therefore, building trust in the banking institution is crucial for improving the customer experience.

At the stage of service decision-making after gathering data from online sources, the employment of data mining and machine learning is essential for analysing data and making informed credit decisions. Now, with the aid of a robot-advisor, customers can receive credit decisions swiftly, moving away from traditional methods that could take up to two weeks due to advisory and underwriting processes. The integration of AI into credit decision-making processes offers a rapid and well-informed approach, streamlining what was traditionally a lengthy journey involving advisory networks and underwriting. This not only accelerates decision-making but also enhances the customer's sense of empowerment. It is essential to strike a balance between managing organizational risk, maximizing profits, and promoting financial inclusion. Khandani *et al.,* (2010) leveraged machine learning to create a model for assessing customer credit risk. Koutanaei et al., (2015) developed a data mining model to bolster confidence in credit scoring systems. To mitigate organizational risk, Mall (2018) utilized a neural network approach to analyse the behaviour of customers at risk of default, with the aim of reducing credit risk and boosting profitability for credit institutions. At the post stage decision, Xu *et al*., (2020) observed that in the final phase known as customer service centres, people generally prefer human help for complicated tasks. Human

intervention is deemed essential, especially for tasks that require, according to Baiden, (2011), manual assessment which is pivotal in credit evaluations, as AI systems may be prone to errors or mis-judgments.

While AI offers numerous benefits to customers and organizations, Jakšič and Marinč, (2019) argue that maintaining relationship banking is essential for financial institutions to remain competitive. To incorporate AI effectively, it is suggested that banks optimize their channels. Soltani et al., (2019) propose that financial institutions can enhance efficiency by using machine learning to streamline appointment scheduling and shorten service times. As the customer decision process involves a journey from information gathering to decision queue and finally to post-service behaviour, AI positively influences consumers' decision-making in their banking journey. Swacha-Lech (2017) emphasized the urgent necessity for banks to evolve by providing digital services via mobile apps and interactive websites. This shift is crucial not only for maintaining relevance but also for sustaining trust in traditional currencies within an economy increasingly dominated by technology. The difficulty, however, is in implementing digital transformation strategies that meet the changing demands of the market. Kaur et al. (2021) delved into the risks associated with digital banking in Northern India, emphasizing the disruption caused by digital transformation. The study underscores the importance of aligning banking services and products with customer expectations to maintain satisfaction and retain customers. The findings suggest that reliability; tangibility and responsiveness are crucial factors influencing customer satisfaction in digital banking, indicating that banks must provide a hassle-free, personalized, and cyber-secure experience to gain a competitive advantage.

The transition to digital banking has fundamentally altered customer expectations, with a clear preference for services that offer convenience, security and personalization. Swacha-Lech (2017) and Kaur *et al.* (2021) both emphasize the necessity for banks to implement digital transformation strategies that cater to these expectations. The challenge lies not only in adopting new technologies but also in ensuring that these technologies enhance the customer experience without compromising security or personal touch. The banking sector's ability to meet customer expectations in the digital age hinges on its willingness to embrace digital transformation while maintaining the essence of traditional banking trust, security and personalized service. As digital banking becomes the norm, banks must

continue to innovate and adapt to the changing landscape, ensuring that they not only meet but exceed customer expectations in this new era. Patil and Dhamdhere (2022) explored the utilization of voice-based systems in banking, emphasizing the role of chatbots in automating mundane tasks and providing quick, self-learning solutions to customer inquiries. This trend not only improves the client experience but also supports banking personnel by mitigating direct contact challenges.

Sheth *et al.* (2022) delve into the personalized banking experience facilitated by AI in emerging markets, highlighting the necessity of human intervention alongside AI to cater to the unique infrastructure and customer service needs in these regions. Their research underscores the importance of AI in creating personalized customer experiences through in-depth interviews with financial experts, revealing key themes such as the significance of AI-mediated banking awareness and the role of AI-driven interfaces. Deepthi *et al.* (2022) assess the dynamics of AI-driven technologies in the Indian banking and financial sector from the employees' perspective. Their study identifies customer satisfaction, AI knowledge among employees and third-party tie-ups as critical factors influencing the implementation of AI technologies. Despite the low adoption rate in India compared to developed economies, AI technology significantly enhances customer service experiences by reducing costs and improving service quality.

2.1 Theoretical Review

This study is anchored on information security theory by Hong et al. (2003) proposed. The theory was a conceptual basis for exploring strategies that chief information security officer could use to provide tailored information security strategies to prevent cyber exploitation of financial institutions in Nigeria. The theory includes five individual theories: contingency theory, risk management theory, information security policy theory, control, and audit theory, and management system theory (Hong *et al.,* 2003). Though there is no consistent security policy theory, one of the fundamental theories of the IST (Hong *et al.,* 2003), there is a general consensus that one of the key and fundamental means of achieving information security is by the establishment, operationalization, and maintenance of information security policy (Farrell & Gallagher, 2015).

The information policy theory advocates the identification of information security requirements in an organization, drafting, and implementing policies to meet those security requirements. The policy states there must be an explicit and formal

declaration of what is allowed and what is not allowed in terms of using information assets within the allowance of the information security objectives in an organization (Benson, McAlaney & Frumkin, 2018). Information policies of an organization must also be current and relevant (Ogalo, 2012). The information security policy must be regularly maintained and updated to be relevant for information security in the context of the organization to be protected. Information security policies address the human element of information security in organizations (Nica, Potcovaru & Hurdubei, 2019). The postulates of the theory will, therefore, help to achieve the security that pertains to the human element. The risk management theory component of the IST suggests that through an analysis of the risks existing in an organization, information security threats and vulnerabilities can be identified, estimated, and assessed.

2.1.1 Technology Acceptance Model (TAM) Theory

The Technology Acceptance Model theory postulated by Davis (1989), states that perceived usefulness and perceived ease of use are the main drivers of technology and these determine an individual's intention to adopt a technology. This theory as adapted from the Theory of Reasoned Action (TRA) by Ajzen and Fishbein (1980) and Theory of Planned Behaviour (TPB), developed by Ajzen (1985), which is tailored to the context of technology acceptance and usage supports how cash handling practices influence financial performance. According to Bátiz-Lazo (2018), the intention to use serves as mediator of the actual adoption of technology. To the words of Bátiz-Lazo (2018), the decision to adopt a technology follows the four stages as explained below: Stage one is where the external variables such as individual user beliefs or differences with Information Technology. Their evaluation is reflected in Perceived Usefulness (PU) and Perceived Ease of Use (PeU).

Whereas perceived usefulness is a user perception that using the new system would increase his/her performance in the organization and perceived ease of use is the extent to which using the new system would require minimal effort on a user's behalf (Tilakaratna,x 2016). Stage two is attitude which is a consequence of the user's beliefs of using a technology drives the user's attitude towards accepting/rejecting the technology. Stage three is intention where the attitude predicts the desirability of the user using the system and the extent of them using it. Stage four is actual use which is the user's intention to determine how well they would actually use the system. The adoption of technology depends on personal

behaviour and external environment. People perceive that by using technology, they will obtain more benefits without doing much physical and mental effort (Tilakaratna, 2016). The theory is relevance to this study for explaining the acceptance of technology and its effect on service delivery in the banking industry.

3.0 Research Methodology

The study was conducted in Rivers State, Nigeria. The design of the study was quantitative, employing the descriptive survey research design for the study. The population is the employees of commercial Banks in Rivers State, Nigeria. A sample size of 25 employees was randomly selected from the existing banks. The Sample comprised of employees of banks commercial banks operating in Rivers State and customers found in the banking hall. The research instrument used for the study is a researcher-developed questionnaire. All items in Section B were structured using three -point rating scale of Yes, No and No Idea, very high extent, high extent, moderate extent, very low extent and low extent. The instrument developed by the researcher was face validated. All corrections and inputs were built in to the final version of the instrument. The test retest method was used to determine the reliability of the instrument. The instrument was administered to 30 persons who were not part of the sample but part of the study population. The result was then coded for testing using cronbach alpha technique. The reliability index yielded 0.78. On the basis of the high reliability index, the instrument was deemed suitable to be used in conducting the study. The data generated was analyzed using mean, standard deviation and coefficient of variance.

4.0 Discussion

The source of data for this study was questionnaire data which were sourced through the questionnaires administered to selected banks in the sample size. Twenty five (25) questionnaires were designed and administered. One questionnaire was administered in each of the commercial banks. Cumulatively 21 out of the 25 questionnaire were successfully filled and retrieved by the researchers, this represent 84% of the total questionnaire while 4 which represent 16% where not.

Table 1: The Relationship between Chatboth and Customer Service Delivery in Commercial Banks

Chatboth	**Yes**	**No**	**No idea**	**Total**
Chatboth help the in efficient customer service	5	0	0	5
Chatboth is a model for customer service delivery	3	0	1	4
Customers are better served with chatboth	4	1	0	5
Chatboth enhance customer service delivery	3	0	0	3
We admire the application of chatboth	4	0	0	4
Total	**19**	**1**	**1**	**21**
Percentage	**90.5**	**4.8%**	**4.8%**	**100%**

Source: Research Data (2024)

Chatbots and other AI-powered virtual assistants have completely changed customer service in the banking and financial industry. These virtual assistants answer questions, fix problems, and make recommendations in order to provide clients with efficient, individualized help. Chatbots improve customer satisfaction and expedite service delivery since they are always available, can handle several client conversations at once, and are always available. This statement is support by the view of the respondents in the above table. From the table 19 respondents out of the 21 supported this view representing a large proportion of 90.5%. I respondent said No and 1 respondent do not have idea to the question which represent 4.8% each. The researcher therefore inductively concludes that there is Relationship between Chatboth and Customer Service Delivery in Commercial Banks

Table 2: The Extent in Which Artificial Intelligence Affect Management of Customer Complains

Item	Very high extent	High extent	Moderate extent	Very low extent	Low extent

There is automated customer complain with Artificial Intelligence to:	3	1	1	0	0
Customers are well automated with Artificial Intelligence to:	4	-	-	-	-
Artificial Intelligence has affected customer complaint to :	4	-	-	1	-
There is need for increase application of Artificial Intelligence to	2	-	-	1	-
We acknowledge the application of Artificial Intelligence to:	3	-	-	1	-
Total	16	1	1	3	-
%	76.2 %	4.8 %	4.8%	14. 3%	0 %

Source: Research Surrey (2024)

Artificial Intelligence (AI) has the capability to automate the monitoring of compliance and risk, thereby minimizing the time and expenses typically incurred in manual compliance procedures. This automation ensures adherence to regulations, lowers the risk of regulatory fines and penalties, and bolsters the overall compliance initiatives of banks and financial institutions. The responses proved that Artificial Intelligence has very great extent in which it affects the management of customer complain. 16 respondent out of the 21 subscribed to this idea which represent 76.2%, 1 respondent each subscribe to high extent and moderate extent which is 4.8%, 3 respondents said very low extent which is 14.3 while none respond to low extent The researcher therefore concludes inductively that Artificial Intelligence has very great extent in which it affects the management of customer complain in the banking sector.

Table 3: The Relationship between Artificial Intelligence and Customer Account Management

Item	Yes	No	No idea	Total

Customer account safety is ensured with Artificial Intelligence	5	-	-	5
Unauthorized withdrawal is track with Artificial Intelligence	3	0	1	4
Effective customer account management is achieved with Artificial Intelligence	4	-	1	5
Customers are happier with Artificial Intelligence	2	1	0	3
Artificial Intelligence enhances customer account management	4	-	-	4
Total	18	1	2	21
Percentage	85.7%	4.8%	9.5%	100%

Source: Research Surrey (2024)

In banking and finance, the usage of AI algorithms for fraud detection is growing. These algorithms are particularly good at instantly evaluating large volumes of transactional data, which makes it easier to spot odd trends and perhaps fraudulent activity. By using machine learning approaches, artificial intelligence (AI) systems can better identify and prevent fraud by continuously enhancing their capabilities through learning from fresh data. From the responses in the above table, 18 respondents of the 21 respondents are of the opinion that there is relationship between Artificial Intelligence and Customer Account Management which is 85.7%, I respondent said No relationship representing 4.8% while 2 respondents has No idea to the question which is 9.5%. From the above respondents, the researcher inductively concludes that there is relationship between Artificial Intelligence and Customer Account Management

Table 4: The Extent in Which Artificial Intelligence Affects Efficient Service Delivery in Commercial Banks

Item	Very high extent	High extent	Moderate extent	Very low extent	Low extent

Artificial Intelligence has affected efficient service delivery	-	5	-	-	-
Artificial Intelligence is known for its efficiency in customer service	1	2	1	-	-
Artificial Intelligence enhances customer service delivery	2	2	1	-	-
Artificial Intelligence is welcome development in customer service delivery	1	1	1	-	-
Artificial Intelligence has made customers effectively ustilise ban service	2	2	0	-	-
Total	6	12	3	0	0
%	28.6%	57.1%	14.1%	-	-

Source: Research Data (2024)

The incorporation of AI technologies automates manual processes, mitigating human error and reducing processing times. By automating repetitive tasks, AI systems boost operational efficiency, streamlining various banking operations. This results in expedited and more precise transaction processing, account management, and data analysis. From the responses above, 6 respondents out of the 21 is opinion that Artificial Intelligence Affects Efficient Service Delivery in Commercial Banks which represent 28.6%, 12 respondent are of the opinion of high extent which represent 57.1% while 3 respondents are of the opinion of moderate extent representing 14.1%, No respondent is of the opinion of very low and low extent from the responses analysis. It can be inductively agreed that Artificial Intelligence Affects Efficient Service Delivery in Commercial Banks to a great extent.

Table 5: The relationship between Artificial Intelligence and Credit Rating of Customers in Commercial Banks

Items	Yes	No	No idea	Total

Artificial Intelligence affect credit rating standard of customers	3	0	2	5
Artificial Intelligence simplify credit management for customers	2	1	1	4
Artificial Intelligence is required for effective credit scoring	4	0	1	5
Artificial Intelligence enhances credit rating of customers	2	0	1	3
Artificial Intelligence manages credit rating	2	1	1	4
Total	13	2	6	21
Percentage	61.9%	9.5%	28.6%	100%

Source: Research Data (2024)

When assessing an individual's or business's creditworthiness, credit scoring plays a crucial role. Artificial intelligence (AI) credit score models use machine learning algorithms to examine a wide range of factors and past data, enabling more accurate risk assessments. By taking into account a wider range of factors and trends, AI models provide lenders with improved instruments for credit assessment. From the responses above, 13 respondents out of the 21 are opinion that Artificial Intelligence has relationship with Credit Rating of Customers in Commercial Banks which is 61.9%, 2 respondents said No which is 9.5% while 6 respondents has no idea to the question which is 28.6. From the responses analysis it can be inductively agreed that there is relationship between artificial intelligence and credit rating of customers in commercial banks.

4.1 Discussion of Findings

The adoption of Artificial Intelligence technologies in banking is not merely a trend but a strategic imperative that is reshaping the industry's future. Coetzee (2018) elucidates the transformative impact of fintech, including AI, on South African retail banks, emphasizing that technological advancements and changing consumer preferences are redefining banking operations, solutions, and interactions. This evolution necessitates a strategic reorientation, where banks must leverage AI to enhance efficiency, personalize customer experiences, and remain competitive in

the rapidly changing financial landscape. The integration of Artificial Intelligence (AI) in banking has ushered in a new era of efficiency and personalized customer service. However, this technological advancement brings with it significant ethical and privacy concerns that banks must navigate to maintain trust and compliance. Stahl and Wright (2018) delve into the ethical issues and data privacy concerns arising from AI and Computer Science, highlighting the challenges posed by AI algorithms and self-operating systems. The paper emphasizes the importance of addressing bias, transparency, accountability, and fairness in AI applications, alongside adapting to changing regulations concerning data privacy. The strategic implications of AI in banking extend beyond operational efficiency and customer service enhancement to include ethical and privacy concerns. Banks must take proactive steps to address these issues, ensuring that AI technologies are implemented responsibly and sustainably. By doing so, banks can leverage the benefits of AI while maintaining customer trust and adhering to regulatory requirements, paving the way for a future where technology and ethics coalesce to redefine the banking landscape.

5.0 Conclusion and Recommendations

This study examined the relationship between artificial intelligence and customer service delivery of commercial banks in Rivers State. The future of artificial intelligence in banking and financial services holds great promise, poised to revolutionize the industry in multiple ways. With the swift evolution of artificial intelligence technology and the increasing accessibility of data, banks and financial institutions find themselves in a unique position to leverage artificial intelligence capabilities for driving business growth, enhancing customer experiences, and mitigating risks in the banking industry. From the analysis presented in this study, we conclude that artificial intelligence has significant relationship with customer service delivery. Accordingly, the following recommendations were made:

i. Commercial Banks should focus on training auditors to keep pace with technological advances in artificial intelligence applications in service delivery, representing knowledge, and controlling the search for such evidence within databases.

ii. There should be improved Awareness in Artificial Intelligence technologies by employees and customers in the banking industry to foster better audit quality
iii. Banks should pay more attention to giving customers many opportunities to develop and practice the application of artificial intelligence methods because of their importance in service delivery.
iv. Banks should prioritize data privacy security while ensuring that the quality of service delivery to customer's process is not jeopardized.

References

Arif, I., Aslam, W., & Hwang, Y. (2020). Barriers in adoption of internet banking: A structural equation modeling-Neural network approach. *Technology in Society, 61, 101231.*

Ashoka, M. (2017). Customer acceptance of millennial generation banking services: challenges and prospects. Available at SSRN: https://dx.doi.org/10.2139/ssrn.2929837.

Baiden, J. E. (2011). The 5 C's of Credit in the Lending Industry. Available at SSRN 1872804: https://dx.doi.org/10.2139/ssrn.1872804 17.

Belanche, D., Casaló, L. V, & Flavián, C. (2019). AI in FinTech: understanding robo-advisors adoption among customers. *Industrial Management & Data Systems, 119(7), 1411–1430.*

Belanche, D., Casaló, L. V., & Flavián, C. (2019). AI in FinTech: understanding robot-advisors adoption among customers. *Industrial Management & Data Systems, 119(7), 1411-1430.*

Bitner, M. J., Ostrom, A. L., & Morgan, F. N. (2008). Service blueprinting: a practical technique for service innovation. California Management Review, 50(3), 66–94.

Broby, D. (2021). Financial technology and the future of banking. *Financial Innovation, 7(1), 1–19.*

Broby, D. (2021). Financial technology and the future of banking. Financial Innovation, 7(1), 1–19. 26.

Calderon-Monge, E., & Ribeiro-Soriano, D. (2024). The role of digitalization in business and management: a systematic literature review. *Review of Managerial Science, 18(2), 449–491.*

El-Gohary, H., Thayaseelan, A., Babatunde, S. and El-Gohary, S., (2021). An exploratory study on the effect of artificial intelligence-enabled technology on customer experiences in the banking sector. *Journal of Technological Advancements (JTA), 1(1), 1-17.*

Ghandour, A., (2021). Opportunities and challenges of artificial intelligence in banking: Systematic literature review. *TEM Journal, 10(4), pp.1581-1587.*

Grand View Research (2022). AI Market Size, Share | AI Industry Report, 2025, Grand View Research. Available at: *https://www.grandviewresearch.com/industry-analysis/artificial-intelligence-ai-market.*

Jaiwant, S.V., (2022). Artificial intelligence and personalized banking. In Handbook of Research on Innovative Management Using AI in Industry 5.0 (pp. 74-87). *IGI Global. https://dx.doi.org/10.4018/978-1-7998-8497-2.ch005*

Khandani, A. E., Kim, A. J., & Lo, A. W. (2010). Consumer credit-risk models via machine-learning algorithms. *Journal of Banking & Finance, 34(11), 2767-2787.*

Koutanaei, F. N., Sajedi, H., & Khanbabaei, M. (2015). A hybrid data mining model of feature selection algorithms and ensemble learning classifiers for credit scoring. *Journal of Retailing and Consumer Services, 27, 11–23.*

Mall, S. (2018). An empirical study on credit risk management: the case of nonbanking financial companies. *Journal of Credit Risk, 14(3), 49–66.*

Schwartz, E. M., Bradlow, E. T., & Fader, P. S. (2017). Customer acquisition via display advertising using multi-armed bandit experiments. *Marketing Science, 36(4), 500-522.*

Schwartz, E. M., Bradlow, E. T., & Fader, P. S. (2017). Customer acquisition via display advertising using multi-armed bandit experiments. *Marketing Science, 36(4), 500-522.*

Sharma, M., (2023). A Study: How AI is Incorporated in the Middle East Banking. *Journal for Research in Applied Sciences and Biotechnology, 2(3), 202-208.*

Sharma, S. K., Govindaluri, S. M., Al-Muharrami, S., &Tarhini, A. (2017). A multi-analytical model for mobile banking adoption: a developing country perspective. *Review of International Business and Strategy, 27(1), 133–148.*

Sheth, J. N., Jain, V., Roy, G., & Chakraborty, A. (2022). AI-driven banking services: the next frontier for a personalised experience in the emerging market. *International Journal of Bank Marketing, 40(6), 1248-1271.*

Sheth, J.N., Jain, V., Roy, G. & Chakraborty, A., (2022). AI-driven banking services: the next frontier for a personalised experience in the emerging market. *International Journal of Bank Marketing, 40(6), 1248-1271.*

Smeureanu, I., Ruxanda, G., & Badea, L. M. (2013). Customer segmentation in private banking sector using machine learning techniques. *Journal of Business Economics and Management, 14(5), 923-939.*

Soltani, M., Samorani, M., &Kolfal, B. (2019). Appointment scheduling with multiple providers and stochastic service times. *European Journal of Operational Research, 277(2), 667–683.*

Swacha-Lech, M., (2017). The main challenges facing the retail banking industry in the era of digitalisation. *RozprawyUbezpieczeniowe. Konsumentnarynkuusługfinansowych, 4(26), 94-116.*

Tad, M.S., Mohamed, M.S., Samuel, S.F. and Deepa, M.J., (2023). Artificial Intelligence and Robotics and their Impact on the Performance of the Workforce in the Banking Sector. *Revista de Gestão Social e Ambiental, 17(6), e03410-e03410.*

Trivedi, J. (2019). Examining the customer experience of using banking chatbots and its impact on brand love: The moderating role of perceived risk. *Journal of Internet Commerce, 18(1), 91–111.*

Xu, Y., Shieh, C.-H., van Esch, P., & Ling, I.-L. (2020). AI customer service: Task complexity, problem-solving ability, and usage intention. *Australasian Marketing Journal, 28(4), 189–199.*

Yang, J., Chen, Y.-L., Por, L. Y., & Ku, C. S. (2023). A systematic literature review of information security in chatbots. *Applied Sciences, 13(11), 6355.*

Yang, X., (2023). The effects of AI service quality and AI function-customer ability fit on customer's overall co-creation experience. *Industrial Management & Data Systems, 123(6), 1717-1735*.