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## ASSESSING HOW AI-DRIVEN CHATBOTS IMPACT CUSTOMER EXPERIENCE AND SATISFACTION IN NIGERIAN COMMERCIAL BANKS

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### Abstract

This study is a systematic and explorative review research method with the aim of ascertaining how AI-driven Chatbots impact customer experience and satisfaction in Nigerian Commercial banks. AI-driven chatbots are software applications powered by artificial intelligence technologies that interact with users through text or voice which is a human-like conversation. Chatbots driven by AI have become a revolutionary force in the banking industry, providing improved customer service, operational effectiveness, and financial inclusion. Through 24/7 accessibility, prompt responses, customer complaints resolution and customized banking experiences, their incorporation into Nigerian banks has increased client engagement. Despite these benefits, adoption is hampered by issues like data privacy concerns, regulatory limitations, and the requirement for ongoing advancements in AI capabilities. By offering real-time responses, automating tedious activities, and enabling banks to reach a larger audience, AI chatbots greatly improve customer experiences. Nigerian banks are using AI to enhance client engagement and service delivery, as demonstrated by the use of chatbots like Ada (FirstBank), Leo (UBA), and Habari (GTBank). The systematic study shows that chatbots powered by AI are becoming a crucial aspect of contemporary banking operations, especially in Nigerian commercial banks. The study concludes that through automation, immediate responses, tailored interactions, and round-the-clock accessibility, these intelligent solutions improve customer service delivery. One of the most important measures of banking performance and competitiveness is still customer satisfaction. AI-powered chatbots increase customer satisfaction by enhancing operational effectiveness, convenience, responsiveness, and service quality. The study recommends that Nigerian commercial banks must constantly enhance their AI chatbot systems in order to guarantee dependability, security, personalization, and customer-centered service delivery. The study advised that if AI-driven Chatbot is not adequately handled, issues like cybersecurity threats, technological constraints, and decreased human engagement could have a detrimental impact on consumer experiences

**Keywords:** Artificial Intelligence, AI in Robotics, AI for Cybersecurity, Neuro-Symbolic AI, AI for Scientific Discovery, Quantum Artificial Intelligence (Quantum AI), AI in Healthcare and Precision Medicine, AI for Climate and Sustainability, AI for Business

## **Introduction**

AI-driven chatbots are software applications powered by artificial intelligence technologies that interact with users through text or voice which is a human-like conversation (Dwivedi et al 2021). Rapid advances in information and communication technologies have significantly changed the banking sector worldwide. Artificial Intelligence (AI) has become one of the most significant technical advancements influencing financial institutions' operations in recent years. AI is the term used to describe how computer systems mimic human cognitive functions, such as learning, reasoning, problem-solving, and decision-making (Dwivedi et al 2021). AI-driven chatbots have grown in popularity among the many uses of AI in the banking industry due to its capacity to deliver automated customer support services effectively and consistently. Nigerian commercial banks have also used this innovation as part of their digital transformation plans to boost competitiveness, operational effectiveness, and customer service delivery (Adebayo et al. 2023).

In the past, in-person interactions between clients and bank employees were a major component of Nigerian banking services. Consumers went to banking halls to transfer money, ask questions, file grievances, or get financial assistance. However, the pattern of consumer involvement has shifted due to the expansion of digital financial services, mobile banking, and internet banking. Consumers today want banking experiences that are quicker, easier, and more customized. As a result, Nigerian commercial banks, including Access Bank Plc, Zenith Bank Plc, Guaranty Trust Holding Company Plc, and First Bank of Nigeria Limited, have implemented AI-powered chatbots on their websites, mobile applications, and social media platforms to answer client questions and offer real-time banking support (CBN 2022).

AI-driven chatbots are computer programs created to mimic human dialogue via voice or text exchanges. These chatbots comprehend client queries and respond appropriately by utilizing technology like Natural Language Processing (NLP), Machine Learning (ML), and data analytics. AI chatbots may work around the clock, manage several customer contacts at once, and instantly respond to often requested inquiries, in contrast to traditional customer care systems that rely only on human agents. Banks benefit from this innovation by having shorter wait times, cheaper operating expenses, and better customer service. Without having to go to the banking hall, customers may simply check account balances, transfer money, report lost ATM cards, receive account statements, and learn more about banking products (Chukwuka Dibia 2024).

In the banking sector, one of the most important factors influencing an organization's success is customer satisfaction. It describes how much clients believe a bank's goods and services fulfill or surpass their expectations. Banks are always looking for new and creative ways to draw in, please, and keep clients in a highly competitive financial market like Nigeria. Customers who are happy with the bank are more likely to stick with it, refer others to it, and have enduring connections with it. On the other hand, inadequate customer service can lead to discontent, complaints from consumers, a bad public image, and eventually a loss of clients to rival institutions. In order to improve customer happiness and service quality, numerous Nigerian commercial banks are making significant investments in digital technology, particularly chatbots powered by artificial intelligence (Adeleke, & Adebayo 2022).

AI chatbots' introduction into Nigerian banking processes has presented both opportunities and difficulties. On the one hand, chatbots powered by AI offer prompt responses, lessen the workload for customer service agents, and increase service accessibility. Consumers can use computers or cellphones to communicate with chatbots at any time and from any

location. This is especially crucial in Nigeria, where the adoption of digital banking services has accelerated due to rising smartphone penetration and internet usage. By analyzing consumer behavior and preferences, AI chatbots also help with effective complaint resolution and customized banking experiences (Adel & Hassan 2022).

However, there are also questions about how well AI-powered chatbots delight consumers. When chatbots are unable to comprehend complex questions, give erroneous answers, or lack the emotional intelligence that comes with human interaction, some clients encounter problems. Customers may get irritated in some circumstances if they can't speak with human customer support representatives directly. Customers' opinions and acceptance of chatbot services in Nigeria may also be impacted by concerns about data privacy, cybersecurity, technological literacy, and network instability. Thus, even if AI-powered chatbots are becoming more widely used, it is still unclear how much these technologies improve customer happiness in Nigerian commercial banks (Adewale, Olaniyi & Ojo 2022).

A dynamic and competitive environment marked by rising client expectations, technological innovation, and regulatory reforms characterizes the Nigerian banking industry. Banks are always under pressure to reduce operating expenses while raising the caliber of customer service. In order to accomplish these goals, the use of AI technology has grown in importance. However, consumer acceptability and happiness are critical to these technologies' success. Although digital banking and customer service delivery has been the subject of numerous research, the effect of AI-driven chatbots on customer satisfaction in Nigerian commercial banking has received little empirical attention. The majority of research that is now available focuses on developed economies, which have quite different customer behavior and technological infrastructure than Nigeria.

Furthermore, elements including internet connectivity, digital literacy, technological trust, service dependability, and cultural preferences for human interaction may have an impact on customer satisfaction in Nigeria. It is vital to look into how AI-driven chatbots impact Nigerian clients' banking experiences because of the country's particular socioeconomic and technological circumstances. For banks looking to improve their digital customer support systems, knowing how customers see chatbots' efficacy, responsiveness, convenience, dependability, and customization will be very helpful (Chiemeké, Obi & Adeyemi, 2021). Therefore, the purpose of this study is to evaluate the effects of chatbots powered by AI on customer satisfaction in Nigerian commercial banks. The goal of the study is to determine how much chatbot services enhance consumer convenience, responsiveness, service delivery, and the entire banking experience. Additionally, it will ascertain whether AI-driven customer assistance systems considerably improve customer satisfaction and loyalty in the Nigerian banking industry and uncover the difficulties related to chatbot utilization. By offering helpful information for enhancing AI adoption and customer relationship management in the financial sector, the research's conclusions will benefit bank management, legislators, scholars, and technology developers (Adewuyi & Fadelu 2023).

The research will also add to the expanding corpus of information on digital banking and artificial intelligence in developing nations. Nigerian commercial banks need to know how to successfully incorporate chatbot systems into their customer care operations without jeopardizing client happiness and confidence as AI technology continues to advance globally. In order to achieve sustainable growth and a competitive edge in Nigeria's banking sector, it is pertinent and appropriate to evaluate how AI-driven chatbots affect client happiness (Adewuyi & Fadelu 2023).

**Statement of Problem and the Justification for this Study**

Recent developments in Artificial Intelligence (AI) and the increasing need for effective customer care have caused the banking sector to undergo a substantial digital transformation. Among these developments, AI-powered chatbots have become a crucial instrument for improving consumer interactions by offering immediate answers, tailored support, and 24/7 assistance. Chatbot technologies are being used by Nigerian commercial banks more frequently on their websites, mobile banking apps, and social media platforms in an effort to enhance client interactions, lower operating costs, and improve service delivery. Even if AI-powered chatbots are being used more frequently in Nigerian commercial banks, there are still questions about how well they can satisfy customers and raise their level of happiness. Many consumers still face issues like erroneous answers, chatbots' incapacity to comprehend complicated questions, a lack of human-like engagement, system outages, and worries about data security and privacy. Customers' opinions of the quality of the services and their inclination to stick with chatbot-based banking services may be adversely affected by these problems.

Additionally, despite the fact that banks have invested heavily in chatbot technology, there is still little and conflicting empirical data about how these technologies actually affect customer satisfaction in Nigerian banking. AI-driven chatbots as a separate customer service channel have received very little attention in previous research, which has mostly concentrated on digital banking adoption, electronic service quality, and customer relationship management. Findings from research done in developed economies might not fully describe consumer experiences in the Nigerian banking industry given the country's particular socioeconomic, technological, and infrastructure challenges. Therefore, it is necessary to methodically evaluate the impact of AI-driven chatbots on customer satisfaction in Nigerian commercial banks. The study specifically aims to investigate if characteristics of chatbots, such as responsiveness, accuracy, accessibility, customisation, and dependability, favorably impact consumer happiness and loyalty. In order to comprehend the efficacy of chatbot technology and offer evidence-based suggestions for enhancing customer service delivery in the Nigerian banking sector, it is imperative that this gap be filled.

This study is significant because Nigerian commercial banks are increasingly depending on AI-driven technology to improve client engagement and operational efficiency. client happiness is now a crucial factor in determining client retention, loyalty, and organizational performance as the banking industry becomes more competitive. For banks looking to keep a competitive edge in an increasingly digitalized market, it is crucial to comprehend how much AI-driven chatbots contribute to client happiness.

This study is warranted since it offers factual data regarding chatbot technology's efficacy in Nigeria's banking industry, where the use of digital banking is still growing. The results will assist bank management in determining areas that need improvement and assessing if their investments in AI-powered customer support platforms are producing the intended results.

From a strategic and policy standpoint, the study is equally important. The results can be used by regulators and financial services industry stakeholders to create rules and guidelines for the application of AI technologies that improve consumer experience while guaranteeing security, privacy, and ethical compliance. Additionally, the study will add to the larger conversation about innovation and digital transformation in emerging economies. Academically,

the study will add context-specific information from Nigeria to the body of knowledge already available on artificial intelligence, customer relationship management, and service quality. It will close a significant information gap about the connection between commercial banking client happiness and chatbots powered by artificial intelligence. Future academics interested in investigating AI applications in financial services and other industries may find the paper useful as a reference.

Lastly, by emphasizing elements that affect consumers' experiences with chatbot-enabled financial services, the study will help consumers. The research's conclusions can help banks create chatbots that are more accurate, responsive, and easy to use, which will eventually increase customer satisfaction and fortify enduring client relationships.

The main objective of this paper is to ascertain how AI-driven Chatbots impact customer Experience and satisfaction in Nigerian Commercial Banks

## **Literature Review**

### **Concept of Artificial Intelligence (AI)**

Artificial Intelligence refers to the simulation of human intelligence processes by machines and computer systems. AI enables machines to perform tasks that normally require human intelligence, such as learning, reasoning, problem-solving, speech recognition, and decision-making (Akinwale & Salawu 2022). AI systems rely on technologies such as machine learning, natural language processing (NLP), robotics, and data analytics. AI has become an essential component of digital transformation in many sectors, including healthcare, education, transportation, and banking. In the banking sector, AI applications include fraud detection systems, credit scoring, predictive analytics, automated customer support, and personalized financial services. AI technologies improve operational efficiency by automating repetitive tasks and enabling organizations to process large amounts of data accurately and quickly (Chukwuka & Dibia 2024). Banks utilize AI to analyze customer behaviors, detect suspicious transactions, and provide personalized banking recommendations. The increasing adoption of AI in Nigerian commercial banks is driven by the need to improve service delivery, remain competitive, and satisfy digitally oriented customers. AI technologies provide opportunities for banks to reduce waiting times, increase accessibility, and deliver banking services continuously without physical human interaction. Although Adebayo et al (2023) affirmed that Artificial Intelligence (AI) is a branch of computer science and an interdisciplinary field that focuses on designing, developing, and deploying computer systems capable of performing tasks that ordinarily require human intelligence. Learning from experience, comprehending natural language, identifying patterns, solving issues, coming to conclusions, using logic, perceiving surroundings, and adjusting to novel circumstances without being specifically designed for every scenario are some of these skills. In order to create intelligent systems that can analyze data, recognize relationships, forecast outcomes, and continuously improve their performance through learning algorithms, artificial intelligence (AI) integrates concepts from computer science, mathematics, statistics, cognitive science, neuroscience, psychology, linguistics, philosophy, and engineering. AI systems are built to learn from data, see patterns, and make well-informed judgments with little

assistance from humans, in contrast to conventional computer programs that adhere to set instructions (Ayo et al 2023).

### **The AI-Driven Chatbots**

Mogaji et al (2022) assert that AI-driven chatbots are software applications powered by artificial intelligence technologies that interact with users through text or voice which is a human-like conversation. These chatbots are designed to understand customer requests, interpret meanings, and provide automated responses in real time. Unlike traditional chatbots that operate using pre-programmed responses, AI-driven chatbots use machine learning and natural language processing to learn from interactions and improve communication over time. They can answer customer inquiries, process banking requests, provide account information, and guide users through financial transactions. AI-driven chatbots function as virtual customer service representatives capable of handling multiple customers simultaneously. In commercial banking, chatbots are commonly integrated into mobile banking. Applications, websites, WhatsApp platforms, and social media channels. Khanna et al (2023) posit that AI-driven chatbots are intelligent software applications that use Artificial Intelligence (AI) technologies, including Natural Language Processing (NLP), Machine Learning (ML), Natural Language Understanding (NLU), Natural Language Generation (NLG), and, increasingly, Generative AI and Large Language Models (LLMs), to simulate human-like conversations with users through text, voice, or multimodal interfaces. Unlike traditional rule-based chatbots that rely on predetermined scripts and decision trees, AI-driven chatbots can grasp the context, intent, sentiment, and nuances of human language, enabling them to give personalized, adaptive, and context-aware responses in real time.

### **Characteristics of AI-Driven Chatbots According to Khanna et al (2023)**

The major characteristics of AI-driven chatbots include:

1. **Automation:**  
AI chatbots automate customer interactions without requiring direct human involvement.
2. **24/7 Availability:**  
Chatbots provide continuous customer support at all times, including weekends and holidays.
3. **Natural Language Processing:**  
They understand and interpret human language for meaningful communication.
4. **Machine Learning Capability:**  
AI chatbots improve performance based on previous interactions and customer data.
5. **Instant Response:**  
They respond to customer inquiries immediately, reducing waiting time.
6. **Multi-channel Integration:**  
Chatbots operate across various platforms such as websites, mobile apps, and messaging services.
7. **Personalization:**  
Advanced AI chatbots can personalize responses based on customer preferences and transaction history.

## **Types of AI-Driven Chatbots in Banking**

AI-driven chatbots used in commercial banks can be categorized into different types based on their functionality and technological sophistication. Your text is probably 80% AI-generated. The technology and skills of AI chatbots in banking can be used to classify them. The two originally known primary varieties of chatbots are rule-based and AI-driven (Conversational AI), with certain variants using NLP and ML for enhanced functionality. Today, we have more of the types as shown below.

### **Rule-Based Chatbots**

These chatbots operate using predefined rules and scripted responses. They provide answers based on specific commands or keywords entered by customers. Although effective for simple tasks, rule-based chatbots have limited conversational flexibility. Rule-based chatbots function utilizing predefined decision trees and scripted responses. They adopt a structured approach, offering responses according on a set of rules created by developers. These chatbots work well for straightforward, repetitive activities including answering frequently asked questions (FAQs), checking account balances, and assisting users with different financial services (Sharma & Goyal, 2022). They can have trouble answering complicated or unstructured questions, though, and they do not learn from exchanges. For instance, the chatbot might not be able to answer a customer's inquiry accurately or might require human assistance if it falls outside of the pre-programmed possibilities (Gupta et al., 2023).

### **AI Conversational Chatbots**

These are advanced chatbots powered by machine learning and natural language processing. They can understand complex customer inquiries, learn from conversations, and provide more human-like responses. Conversational AI chatbots integrate deep learning, natural language processing, and machine learning to have livelier, human-like dialogues with users. They can comprehend context, intent, and emotions in contrast to rule-based chatbots, enabling more customized interactions (Jain et al., 2022). These chatbots are self-learning programs that improve their responses over time by examining past exchanges and honing their algorithms. They are capable of handling intricate banking demands, including guidance on financial planning, suggestions for investments, and questions about fraud detection (Khanna et al., 2023).

### **Voice-Enabled Chatbots**

Voice-enabled chatbots interact with customers through spoken communication. They use speech recognition technologies to process voice commands and provide audio responses. Voice-enabled chatbots, also known as voicebots, are AI-powered assistants that mimic human speech using text-to-speech (TTS), natural language processing (NLP), and speech-to-text (ASR). By analyzing context, adjusting to the flow of the conversation, and providing hands-free support in customer service, healthcare, and e-commerce, they take the role of inflexible menu systems. A voice-enabled chatbot is an AI-powered conversational system designed to communicate with people through spoken language. It listens to vocal input, interprets the user's intent, processes the request using artificial intelligence algorithms, and generates spoken responses. By comprehending inquiries, giving information, carrying out commands, and learning from past

encounters to enhance performance in the future, the chatbot operates similarly to a human customer support agent. A variety of AI technologies are integrated into voice-enabled chatbots, which mimic intelligent human and machine discussions.

Intelligent software programs that communicate with consumers via spoken language instead of only text are known as voice-enabled chatbots. To enable smooth communication between people and computers, they integrate the capabilities of artificial intelligence (AI), speech recognition, natural language processing (NLP), natural language understanding (NLU), text-to-speech (TTS), and machine learning. Through voice conversations, these chatbots enable users to ask inquiries, issue commands, and get natural responses.

Voice-enabled chatbots have become indispensable digital tools in many businesses due to the quick development of cloud computing and artificial intelligence. These days, banking, healthcare, education, retail, telecommunications, hospitality, transportation, customer service, and smart home technologies all make extensive use of them. Apple's Siri, Amazon's Alexa, Google Assistant, Microsoft Copilot, and AI-powered customer support voice assistants used by businesses all over the world are well-known examples.

### **Hybrid Chatbots**

Hybrid chatbots combine rule-based systems with AI capabilities. They can handle both simple and complex customer interactions effectively. Hybrid chatbots are conversational systems that offer more precise, adaptable and effective user interactions by combining the advantages of rule-based and artificial intelligence (AI)-powered chatbots. To provide better user experiences, hybrid chatbots include both machines learning and predetermined rules rather than depending only on one. Predefined decision trees, keywords, and scripted responses are how a rule-based chatbot functions. Answering frequently requested questions, verifying account balances, and providing company hours are examples of repeated, systematic, and predictable requests that work well with it. It has trouble, though, when users ask complicated or unexpected inquiries.

In contrast, artificial intelligence (AI)-driven chatbots employ technologies like Natural Language Processing (NLP), Machine Learning (ML), and occasionally Large Language Models (LLMs) to comprehend context, parse natural language, and provide intelligent responses. Even though AI chatbots are increasingly adaptable and conversational, they can need a lot of processing power or give incorrect answers.

These two technologies are combined in hybrid chatbots. They initially ascertain whether a user's request can be fulfilled by applying pre-established guidelines. The chatbot automatically turns to its AI skills if the request deviates from those guidelines or calls for more in-depth comprehension. This combination minimizes the drawbacks of any individual strategy while guaranteeing effectiveness, dependability, and flexibility.

### **Functions of AI-Driven Chatbots in Nigerian Commercial Banks**

AI-driven chatbots perform several functions in Nigerian commercial banks aimed at improving operational efficiency and customer experience.

#### **AI Chatbot in Customer Support Services**

Chatbots provide responses to customer complaints, inquiries, and requests regarding account balances, transaction histories, loan information, and card services. In bank customer support services, an AI chatbot is a virtual assistant driven by artificial intelligence that interacts with

clients via text or voice to offer immediate assistance, respond to questions, handle common problems, and streamline banking transactions without the need for direct human intervention. Artificial intelligence (AI) chatbots use technologies like Natural Language Processing (NLP), Machine Learning (ML), and Generative AI to comprehend client requests, offer tailored responses, and constantly improve by learning from past interactions. Because these technologies provide quick, safe, and effective client service around-the-clock, they have become an essential part of contemporary digital banking.

### **AI Chatbot in Transaction Assistance**

Customers can perform banking transactions such as fund transfers, airtime purchases, and bill payments through chatbot platforms. The term "AI Chatbot In-Transaction Assistance" describes the use of conversational systems driven by artificial intelligence to offer clients real-time assistance while they are actively conducting financial transactions. In-transaction support helps consumers perform payments, transfers, deposits, withdrawals, account modifications, and other banking activities in a seamless and secure manner, in contrast to traditional customer care, which mostly reacts after a problem has arisen. Natural language processing (NLP), machine learning (ML), artificial intelligence (AI), speech recognition, and predictive analytics are some of the technologies that these AI chatbots use to comprehend customer requests, offer tailored advice, identify transaction errors, and, in the majority of situations, instantly resolve problems without the need for human intervention.

### **AI Chatbot in Financial Advisory Services**

Some AI chatbots provide personalized financial recommendations, savings advice, and spending insights based on customer transaction patterns. In financial advising services, AI chatbots are intelligent virtual assistants that employ artificial intelligence, machine learning, and natural language processing (NLP) to offer clients individualized financial advice, investment insights, help with budgeting, and support for asset management. They improve consumer satisfaction and operational efficiency while enabling financial institutions to provide quick, affordable, and accessible advisory services. Financial adviser chatbots examine consumer information, financial objectives, income trends, spending patterns, and risk tolerance in order to make customized suggestions, in contrast to standard customer service chatbots that mostly respond to commonly asked questions. AI Chatbots' Use in Financial Advisory Services In financial institutions, AI chatbots carry out a number of crucial advisory tasks. By helping clients define savings objectives, make budgets, keep an eye on spending, and create long-term financial plans, they support their clients in financial planning.

### **AI Chatbot in Fraud Detection and Security Alerts**

AI chatbots assist banks in monitoring suspicious activities and notifying customers of potential security threats. AI chatbots monitor consumer transactions and interactions in real time, acting as intelligent security assistants. Before proceeding with any further processing, the chatbot promptly contacts the consumer to confirm the transaction's validity whenever it detects unexpected activity. This quick action reduces monetary losses while boosting client trust in the bank's security measures. Banks are able to deliver immediate alerts, confirm suspicious transactions, inform clients about cybersecurity risks, and expedite the reporting of fraudulent

incidents by integrating AI chatbots into fraud detection systems (Chiemeké, Obi & Adeyemi, 2021). When compared to traditional customer care channels, these capabilities greatly speed up response times. By utilizing artificial intelligence, machine learning, natural language processing (NLP), and real-time data analytics to spot suspicious activity, stop financial losses, and enhance the general security of banking operations, AI chatbots significantly contribute to fraud detection and security alerts. AI-powered chatbots constantly learn from transaction patterns, consumer behavior, and new fraud strategies, in contrast to traditional fraud detection systems that mainly depend on predetermined rules. This allows them to identify abnormalities more precisely and take proactive measures.

### **AI Chatbot in Customer Onboarding**

Chatbots simplify account opening procedures by guiding customers through registration and verification processes. The process of establishing a new client's relationship with a financial institution through account opening, digital banking service registration, identification verification, and familiarization with available goods and services is known as customer onboarding. This procedure used to require a lot of paperwork, lengthy wait times, and numerous trips to bank locations. However, the use of chatbots driven by artificial intelligence (AI) has revolutionized client onboarding. Artificial intelligence (AI) chatbots are intelligent virtual assistants that can interact with clients in natural language, respond to inquiries, gather data, confirm identities, and assist clients with the onboarding process. To automate and customize consumer interactions, they employ technologies including Natural Language Processing (NLP), Machine Learning (ML), Optical Character Recognition (OCR), and Robotic Process Automation (RPA).

### **AI Chatbot in Complaint Resolution**

AI-driven chatbots assist customers in resolving service-related issues quickly and efficiently. Resolving customer complaints in a timely, equitable, and efficient manner is a crucial component of customer relationship management. Customers want businesses to promptly address their issues while upholding professionalism and transparency in the fiercely competitive business world of today. Long wait periods, numerous departmental transfers, inconsistent responses, and high operating costs are common features of traditional complaint-handling techniques.

Chatbots with artificial intelligence (AI) capabilities have become a cutting-edge way to handle client concerns. These intelligent virtual assistants are able to comprehend consumer concerns, respond right away, categorize complaints, offer solutions, elevate complicated situations to human agents, and continuously learn from past interactions. Organizations can increase operational efficiency, decrease response times, and improve customer satisfaction by automating complaint resolution procedures.

### **Concept of Customer Experience and Satisfaction**

The term "customer experience" (CX) describes the general perception, feelings, and impressions that consumers form as a result of each engagement they have with a bank throughout the course of their customer journey. It comprises all direct and indirect encounters between consumers and

the bank, commencing with account opening to everyday banking operations, customer service, complaint resolution, loan applications, and account closure. The quality of banking products is only one aspect of the customer experience. It encompasses all consumer interaction points with the bank, including physical branches, automated teller machines (ATMs), online banking, mobile banking apps, call centers, social media sites, and chatbots driven by artificial intelligence (Mittal et al 2023).

Customer satisfaction refers to the degree to which customers feel pleased or fulfilled with a product or service after comparing their expectations with actual experiences. It represents customers' overall evaluation of service quality, performance, and value received. Customer satisfaction is a critical factor in the banking industry because satisfied customers are more likely to remain loyal, recommend the bank to others, and continue using banking products and services. In commercial banking, customer satisfaction is influenced by factors such as service quality, convenience, reliability, responsiveness, security, accessibility, and customer support. The increasing digitalization of banking services has expanded the determinants of customer satisfaction to include technological efficiency, digital convenience, and the effectiveness of AI-driven systems such as chatbots.

### **Dimensions of Customer Satisfaction in Banking**

Customer satisfaction in banking can be examined through several dimensions which include:

**Service Quality:** Service quality measures the ability of banks to provide reliable, efficient, and accurate services to customers.

**Responsiveness:** Responsiveness refers to the speed and willingness of banks to address customer requests and complaints.

**Accessibility:** Customers expect banking services to be easily accessible through digital platforms and mobile devices.

**Reliability:** Reliability involves consistency in delivering accurate and dependable banking services.

**Security and Privacy:** Customers value the protection of their personal and financial information during digital transactions.

**Convenience:** Convenience refers to the ease with which customers can access and use banking services without stress or delays.

#### **Relationship between AI-Driven Chatbots and Customer Satisfaction**

AI-driven chatbots significantly influence customer satisfaction in commercial banks. The relationship between chatbot usage and customer satisfaction can be explained through several mechanisms.

**Improved Response Time:** One of the major benefits of AI chatbots is their ability to provide immediate responses to customer inquiries. Faster response time reduces customer frustration and enhances service satisfaction.

**Enhanced Service Availability:** AI-driven chatbots operate continuously without interruption, allowing customers to access banking services at any time. This increases customer convenience and satisfaction.

**Personalized Customer Experience:** AI chatbots analyze customer data and provide customized recommendations and responses. Personalized interactions improve customer engagement and satisfaction.

**Reduction in Waiting Queues:** Traditional banking systems often involve long queues and delayed responses. AI chatbots reduce dependency on physical customer service representatives, thereby improving service efficiency.

**Increased Operational Efficiency:** Banks benefit from reduced operational costs and improved productivity through automation. Efficient service delivery positively affects customer perceptions and satisfaction.

**Consistency in Service Delivery:** AI chatbots provide standardized responses, minimizing human errors and ensuring consistency in customer interactions.

### **Benefits of AI-Driven Chatbots in Nigerian Commercial Banks**

The integration of AI-driven chatbots into Nigerian banking operations offers numerous benefits (Ayo, Okonkwo, & Nwankwo, 2023).

**Cost Reduction:** Banks reduce labor costs associated with employing large customer service teams.

**Increased Customer Engagement:** Chatbots maintain active communication with customers and improve customer relationships.

**Enhanced Customer Experience:** Customers enjoy faster, more convenient and personalized banking services.

**Competitive Advantage:** Banks that adopt innovative AI technologies gain competitive advantages in the financial market.

**Improved Efficiency:** Automation improves operational efficiency and enables banks to serve more customers simultaneously.

**Data Collection and Analysis:** AI chatbots collect valuable customer data that banks can analyze for strategic decision-making.

### **Challenges of AI-Driven Chatbots in Nigerian Commercial Banks**

Despite their benefits, AI-driven chatbots face several challenges in Nigerian commercial banks.

**Poor Internet Connectivity:** Inconsistent internet access in some parts of Nigeria affects chatbot performance and accessibility.

**Cybersecurity Risks:** AI systems may be vulnerable to cyberattacks, data breaches, and unauthorized access.

**Limited Human Interaction:** Some customers prefer human communication, especially when dealing with complex financial issues.

**Language and Communication Barriers:** Nigeria's linguistic diversity may create communication challenges for AI chatbots.

**Technical Errors:** Chatbots may misunderstand customer requests or provide inaccurate responses.

**High Implementation Costs:** Developing and maintaining sophisticated AI systems require significant financial investments.

### **Theoretical Link between AI-Driven Chatbots and Customer Satisfaction**

The relationship between AI-driven chatbots and customer satisfaction can be explained through technology and service-related theories.

#### **Technology Acceptance Perspective**

Customers are more likely to use AI-driven chatbots when they perceive them as useful, easy to use, and reliable. Positive user experiences increase satisfaction levels.

#### **Service Quality Perspective**

The quality of chatbot interactions influences customers' perceptions of banking service quality. Efficient and responsive chatbot services contribute to higher customer satisfaction.

#### **Customer Experience Perspective**

AI chatbots enhance digital customer experiences through convenience, accessibility, and personalized interactions. Positive experiences improve customer satisfaction and loyalty.

**Empirical Overview of AI Chatbots in banking.** Several studies have shown that AI-driven chatbots positively affect customer satisfaction in the banking industry. Researchers have found that chatbot responsiveness, reliability, accessibility, and convenience significantly influence customer experiences. In Nigeria, the increasing use of digital banking services has accelerated the adoption of AI-powered customer support systems. Commercial banks continue investing in AI technologies to meet growing customer expectations and remain competitive in the financial sector. However, empirical findings also reveal concerns regarding privacy, trust, technological limitations, and customer preference for human interactions. Therefore, banks must balance automation with human support to achieve optimal customer satisfaction (Ayo, Okonkwo, & Nwankwo, 2023).

### **Theoretical Framework**

Three main theoretical models can be used to analyze the adoption and efficacy of AI-powered chatbots in Nigeria's banking industry: the Artificial Intelligence Maturity Model, which assesses the stages of AI adoption within Nigeria's financial sector; the Technology Acceptance Model (TAM), which examines how perceived usefulness and ease of use affect chatbot adoption; and

the ServQual Model, which evaluates service quality dimensions in AI-driven banking experiences. These frameworks offer a thorough grasp of the elements influencing chatbot deployment and the difficulties influencing its effectiveness. In 1989, Davis developed the Technology Acceptance Model (TAM), which describes how individuals adopt and utilize new technologies based on two primary factors: perceived usefulness (PU) and perceived ease of use (PEOU). The degree to which a user feels that a particular technology enhances their work performance is known as perceived usefulness, whereas perceived ease of use is the amount of work required to run the system. TAM states that people are more likely to adopt a technology if it is helpful and easy to use (Venkatesh & Davis, 2000). AI-driven chatbots are being used in Nigeria's banking industry to enhance customer service by providing automated financial services like fund transfers, balance checks, and loan applications, as well as rapid responses and round-the-clock availability. According to research by Mogaji et al. (2022), Nigerian banking clients are more likely to adopt AI chatbots if they believe they are efficient at answering their questions.

Ease of use, however, is a problem, particularly for elderly or less tech-savvy clients. According to the TAM framework, banks should give priority to developing chatbots that are easy to use.

### **Methodology**

In order to ascertain the nature of connections and to comprehend the motivations, viewpoints, theories, empiricism, and opinions of scholars as well as findings and in addressing the study objectives, this qualitative study used an exploratory and systematic review of the literature of more than 80 research articles published in reputable journals using Scopus, Google Scholar, JSTOR, Crossref, Web of Science. This allowed the use of secondary sources of data of related topics. Guillaume (2019, 1) asserts that systematic literature reviews are an open and repeatable method for integrating scientific data to address a specific research question; they also seek to include all pertinent data and evaluate the quality of the data. Mengist et al. (2020, 2) stress the significance of comprehensive literature evaluations in identifying existing knowledge and knowledge gaps on certain subjects. As previously said, this study created a systematic review of the literature to investigate into the significant academic contributions to the related subjects of Assessing how AI-driven Chatbots impact customer Experience and satisfaction in Nigerian Commercial Banks and related concepts. We examined over 80 empirical and qualitative research publications from respectable international journals to learn about scholarly viewpoints and research findings about the crucial importance AI-driven Chatbots and Bank customers satisfaction. "Thematic analysis is the process of identifying patterns or themes within qualitative data," according to Braun and Clarke (2015, 225), which provided the basis for the research approach used in the literature review.

### **Result and Discussion**

The systematic review of literature of over 80 research papers in Scopus, Web of Science, Google scholar, Crossref etc confirmed that Chatbots driven by AI have become a revolutionary force in the banking industry, providing improved customer service, operational effectiveness, and financial inclusion. Through 24/7 accessibility, prompt responses, and customized banking

experiences, their incorporation into Nigerian banks has increased client engagement (Ayo et al., 2023). Despite these benefits, adoption is hampered by issues like data privacy concerns, regulatory limitations, and the requirement for ongoing advancements in AI capabilities (Okonkwo & Eze, 2022). By offering real-time responses, automating tedious activities, and enabling banks to reach a larger audience, AI chatbots greatly improve customer experiences. Nigerian banks are using AI to enhance client engagement and service delivery, as demonstrated by the use of chatbots like Ada (FirstBank), Leo (UBA), and Habari (GTBank) (Ibrahim & Adepoju, 2023).

The study shows that chatbots powered by AI are becoming a crucial aspect of contemporary banking operations, especially in Nigerian commercial banks. Through automation, immediate responses, tailored interactions, and round-the-clock accessibility, these intelligent solutions improve customer service delivery. One of the most important measures of banking performance and competitiveness is still customer happiness. AI-powered chatbots increase customer happiness by enhancing operational effectiveness, convenience, responsiveness, and service quality. However, if they are not adequately handled, issues like cybersecurity threats, technological constraints, and decreased human engagement could have a detrimental impact on consumer experiences. Therefore, in order to guarantee dependability, security, personalization, and customer-centered service delivery, Nigerian commercial banks must constantly enhance their AI chatbot systems.

The study discovered that Nigerian banks are using AI to enhance client engagement and service delivery, as demonstrated by the use of chatbots like Ada (FirstBank), Leo (UBA), and Habari (GTBank) (Ibrahim & Adepoju, 2023). Additionally, by lowering reliance on human agents, chatbots help banks save money by enabling more effective resource allocation (Ogunleye et al., 2022). By spotting questionable activity in real time, they also contribute significantly to risk management and fraud detection (Chiemeké et al., 2021). However, there are still major obstacles to wider adoption, including user resistance, a lack of sophistication in the chatbot's ability to handle complicated queries, and infrastructure deficiencies (Ndukwe & Adebayo, 2023). To promote greater customer satisfaction, human agents should tackle complicated client concerns in addition to ordinary questions and transactions (Eze & Nwankwo, 2023).

Furthermore, funding AI training courses for banking staff would improve chatbot effectiveness and guarantee smooth integration with current financial systems (Obi & Yusuf, 2022). To solve data privacy issues and encourage ethical AI use in the banking sector, regulatory organizations like the Central Bank of Nigeria (CBN) must also create more transparent AI governance frameworks (Adewale et al., 2022). In order to maximize client happiness, Nigerian banks must strike a balance between automation and human engagement as they continue their digital transition.

AI chatbots improve accessibility and expedite banking processes, but they need to be continuously improved to offer more precise, human-like interactions (Okafor & Chidiebere, 2023). Nigerian banks can employ AI chatbots as a competitive advantage, promoting greater financial inclusion and customer trust in the changing digital banking market, by making strategic investments in AI development, regulatory compliance, and user education.

## Conclusion

Chatbots driven by AI have become a revolutionary force in the banking industry, providing improved customer service, operational effectiveness, and financial inclusion. Through 24/7 accessibility, prompt responses, customer complaints resolution and customized banking experiences, their incorporation into Nigerian banks has increased client engagement (Ayo et al., 2023). Despite these benefits, adoption is hampered by issues like data privacy concerns, regulatory limitations, and the requirement for ongoing advancements in AI capabilities (Okonkwo & Eze, 2022). By offering real-time responses, automating tedious activities, and enabling banks to reach a larger audience, AI chatbots greatly improve customer experiences. Nigerian banks are using AI to enhance client engagement and service delivery, as demonstrated by the use of chatbots like Ada (FirstBank), Leo (UBA), and Habari (GTBank) (Ibrahim & Adepoju, 2023). The systematic study shows that chatbots powered by AI are becoming a crucial aspect of contemporary banking operations, especially in Nigerian commercial banks. Through automation, immediate responses, tailored interactions, and round-the-clock accessibility, these intelligent solutions improve customer service delivery. One of the most important measures of banking performance and competitiveness is still customer satisfaction. AI-powered chatbots increase customer satisfaction by enhancing operational effectiveness, convenience, responsiveness, and service quality. However, if they are not adequately handled, issues like cybersecurity threats, technological constraints, and decreased human engagement could have a detrimental impact on consumer experiences. Therefore, the study concludes that in order to guarantee dependability, security, personalization, and customer-centered service delivery, Nigerian commercial banks must constantly enhance their AI chatbot systems.

## Recommendation

The study recommends that Nigerian commercial banks must constantly enhance their AI chatbot systems in order to guarantee dependability, security, personalization, and customer-centered service delivery. The study advised that if AI-driven Chatbot is not adequately handled, issues like cybersecurity threats, technological constraints, and decreased human engagement could have a detrimental impact on consumer experiences.

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