VOL. 12 NO. 7,
MAY, 2026
E-ISSN 3026-9679
P-ISSN 3026-9423

African Scholar Publications & Research International
www.africanscholarpub.com

Journal of Business Dev. and Management Res. (JBDMR)

Effects of AI-Driven Customer Service on Customer Loyalty Among Mobile Fintech Users in Calabar, Nigeria

Catherine Matthew Joseph[1]; Ubong Etiese Markson[2]; Nnaomah Esther I.[3]; & Dr. Edim Eka James[4]

[1,3,4]Department of Marketing, University of Calabar, Calabar. [2]Department of Marketing, University of Uyo, Uyo.
Corresponding Author: catherinematthew314@gmail.com
DOI: https://doi.org/10.70382/ajbdmr.v12i7.089

Abstract

This study examined the effect of AI-driven customer service on customer loyalty among users of mobile FinTech service providers in Calabar, Cross River State, Nigeria. Specifically, it assessed the influence of AI chatbot, personalized service experience, quick service automation, and AI security infrastructure on customer loyalty. The study adopted a cross-sectional survey research design. A sample size of 357 respondents was determined using the Topman sample size determination procedure from an indeterminate population of mobile FinTech users, while purposive sampling was employed to select respondents who had actively used mobile FinTech platforms for at least one year. Data were collected from 342 valid respondents using a structured five-point Likert-scale questionnaire and analysed using descriptive statistics and multiple linear regression analysis in SPSS. The regression model was statistically significant ($F = 78.245$, $p < 0.001$) and explained 48.2% of the variation in customer loyalty ($R^2 = 0.482$). AI chatbot emerged as the strongest predictor of customer loyalty ($\beta = 0.677$, $p < 0.001$), followed by AI security infrastructure ($\beta = 0.479$, $p < 0.001$), personalized service experience ($\beta = 0.337$, $p = 0.010$), and quick service automation ($\beta = 0.170$, $p < 0.001$). The findings demonstrate that AI-driven customer service significantly enhances customer loyalty towards mobile FinTech service providers. The study concludes that effective deployment of AI-driven customer service represents an important strategy for strengthening customer loyalty within the mobile FinTech industry. Accordingly, mobile FinTech service providers should enhance AI chatbot capabilities, strengthen AI-based security systems, improve service personalization, and optimize automated service

delivery to promote sustained customer engagement and loyalty in Nigeria's competitive FinTech environment.

Keywords: AI-driven customer service, FinTech adoption, chatbot, service personalization, service automation, customer retention, digital financial services.

Introduction

Prior to the rapid advancement in artificial intelligence (AI) technology, customer service delivery was wholly human-centric, driven by direct employee-customer interactions, manual service processes, physical service channels, and traditional communication systems (Hussain, 2024). This system enabled business organizations to provide personalized face-to-face interactions, handle customer complaints directly, build customer relationships through human engagement, and respond to customer needs through physical and manual service operations (Zungu et al., 2025). However, the major limitation of this human-centric system was that it was often slow, costly, constrained by human capacity, prone to errors, and unable to provide continuous real-time service delivery to a growing digital customer population (Bilgihan et al., 2025). As a result, AI-based systems were introduced to address these limitations and improve service efficiency, personalized customer interaction, and real-time digital service delivery (Singh & Singh, 2024).

According to Al-Araj et al. (2022), AI-driven customer service refers to the application of artificial intelligence technologies in service delivery processes to enhance efficiency, improve customer experience, and support automated, personalized, and real-time interaction between customers and service providers. In the mobile financial technology (FinTech) sector, AI-driven customer service is implemented through AI chatbots, personalized service experience systems, quick service automation, and AI security infrastructure (El-Shihy et al., 2024; Junaedi et al., 2024; Al-Araj et al., 2022). AI chatbots enable automated interaction between customers and FinTech platforms for inquiries and support (Al-Araj et al., 2022), while personalized service experience involves the use of customer data to deliver tailored recommendations, alerts, and financial service offerings (Singh & Singh, 2024). Quick service automation allows instant processing of transactions and requests without human intervention (Junaedi et al., 2024), while AI security infrastructure ensures protection through biometric authentication, fraud detection, and real-time monitoring of suspicious activities (El-Shihy et al., 2024). These AI-driven systems have been widely adopted in more developed digital economies where strong infrastructure, high digital literacy, and supportive regulatory systems enable effective implementation (Mohammed & Okechukwu, 2025).

However, despite rapid technological adoption, the Nigerian digital financial ecosystem is characterized by high usage but weak customer loyalty and retention patterns

(Etuk et al., 2025; Ighomereho et al., 2023). Industry data show that electronic payment transactions in Nigeria reached approximately ₦317.2 trillion in Q1 2025 alone (Adegbesan, 2025), while mobile money transactions totalled about ₦20.7 trillion during the same period, driven largely by FinTech platforms such as OPay and PalmPay (Adegbesan, 2025). Although these figures demonstrate strong adoption of digital financial services, they also reflect intense competition among providers, with many customers simultaneously using multiple FinTech applications rather than remaining loyal to a single platform (Ademe-Godwin & Akpan, 2023). Evidence of weak customer retention is further reflected in the approximately 33.3 million dormant bank accounts recorded in Nigeria by March 2025 (Adejumoh, 2025). Similarly, industry reports indicate that over 60% of registered mobile money and FinTech wallets become dormant or inactive shortly after initial setup (Omoruyi, 2025). These statistics suggest that widespread adoption of digital financial services has not translated into sustained customer engagement and loyalty.

In response, mobile FinTech providers increasingly deploy AI-driven customer service systems to improve user experience and reduce switching behaviour (Abdul et al., 2025). Despite these developments, there remains limited empirical evidence on whether AI-driven customer service actually enhances customer loyalty in the Nigerian mobile FinTech context. Most existing Nigerian studies focus on traditional commercial and deposit money banks, with emphasis on customer satisfaction, customer experience, operational efficiency, and bank performance rather than customer loyalty in the mobile FinTech sector (Okoliko et al., 2023; Udodiugwu et al., 2024; Okeke, 2025; Olota et al., 2025). Existing studies also tend to examine isolated AI components such as chatbots, biometric authentication, customer analytics, digital payment systems, and fraud detection systems, rather than integrating AI chatbot, personalized service experience, quick service automation, and AI security infrastructure within a single analytical framework (Adekunle, 2025; Abinabo et al., 2025; Mohammed & Okechukwu, 2025; Uzoamaka & Ade, 2026).

More importantly, customer loyalty has received limited empirical attention in Nigeria despite its importance for sustaining competitive advantage, reducing switching behaviour, and promoting long-term engagement in digital financial services. This creates a significant contextual and theoretical gap, particularly in an environment where customers can easily switch between competing FinTech platforms due to service quality differences, responsiveness, usability, and security concerns. Although international studies suggest that AI-driven customer service improves customer loyalty in FinTech and banking environments (Al-Araj et al., 2022; Junaedi et al., 2024; El-Shihy et al., 2024; Singh & Singh, 2024), there is still insufficient evidence on how these relationships operate within the Nigerian mobile FinTech ecosystem. This gap therefore necessitates an empirical investigation into the effect of AI chatbot, personalized service experience, quick service automation, and AI security infrastructure on customer loyalty among mobile FinTech users in Calabar, Nigeria.

LITERATURE REVIEW

AI-driven customer service

AI-driven customer service is commonly described as the use of artificial intelligence technologies such as chatbots, machine learning, and automation systems to manage customer interactions and deliver services efficiently in real time (Okeke, 2025). It is also viewed as the integration of AI tools into digital financial platforms to enhance responsiveness, personalization, and overall service quality in customer-facing operations (Olota et al., 2025). In addition, it is conceptualized as an AI-enabled service innovation approach that supports automated decision-making, fraud detection, personalized engagement, and improved customer experience within digital banking environments (Uzoamaka & Ade, 2026). Across these definitions, a common understanding is that AI-driven customer service relies on intelligent, data-driven systems to automate, personalize, and improve customer interactions while enhancing efficiency and service delivery. In the mobile FinTech sector, it plays a critical role in enabling app-based, real-time financial services where AI chatbots handle enquiries, personalized systems tailor financial recommendations, automation ensures instant transactions, and AI security systems safeguard user data and transactions (Junaedi et al., 2024; Al-Araj et al., 2022). Empirical evidence suggests that these capabilities improve customer experience and loyalty by increasing convenience, trust, and responsiveness (El-Shihy et al., 2024; Singh & Singh, 2024). However, despite these advantages, challenges such as weak digital infrastructure, cybersecurity risks, limited regulatory clarity, inconsistent chatbot performance, and low user trust continue to constrain effective implementation in practice, particularly within the Nigerian context (Okeke, 2025; Abinabo et al., 2025).

Customer loyalty in the mobile FinTech industry

Customer loyalty is described as the intention of customers to continue using a specific FinTech service provider over time due to positive service experiences and perceived value (Alnsour, 2022). It is also viewed as a combination of behavioural commitment and attitudinal attachment reflected in repeat usage, trust, satisfaction, and willingness to recommend FinTech services to others (Karim et al., 2022). In addition, customer loyalty can be conceptualized as a sustained preference for a FinTech brand driven by customer engagement, self-concept alignment, and strong customer–brand connection in digital financial services (Kini et al., 2024). Across these perspectives, the common ground is that customer loyalty involves both continued behavioural usage and psychological commitment to a FinTech service provider. In the mobile FinTech context, it entails repeated use of mobile payment and financial applications, resistance to switching platforms, and positive word-of-mouth recommendations, all of which are essential for sustaining transaction volume and market competitiveness. It is particularly important for mobile FinTech firms because it determines customer retention, revenue stability, and long-term survival in a highly competitive and low-switching-cost digital environment (Baber, 2020; Zhang & Kim, 2020). Customer loyalty is typically manifested through consistent app usage, repeated transactions, platform preference,

and advocacy behaviours such as referrals and recommendations (Alwi et al., 2019). It is commonly measured using indicators such as retention rates, usage frequency, repeat usage intention, satisfaction levels, and customer referral intention, often assessed through survey data and digital usage analytics in FinTech studies (Zhang & Kim, 2020; Kini et al., 2024).

AI chatbot and customer loyalty

AI chatbot is widely recognized as an artificial intelligence-driven conversational technology that automates interactions between organisations and customers. While Oyeniyi et al. (2024) emphasised its role in simulating human conversation and responding to customer enquiries, Abdulsalam and Tajudeen (2024) focused on the underlying technologies, particularly natural language processing and machine learning, that enable chatbots to understand requests and resolve service issues autonomously. Moving beyond functional capabilities, Sheth et al. (2022) highlighted the capacity of AI chatbots to deliver personalised engagement and real-time financial guidance, whereas Manser et al. (2021) viewed them as platforms for continuous interaction and value co-creation within digital service ecosystems. Although these perspectives differ in emphasis, they collectively suggest that AI chatbots have evolved from simple automated response systems into intelligent service tools that facilitate personalised, interactive, and customer-centred experiences.

The growing importance of AI chatbots is particularly evident in the mobile FinTech service industry, where customer interactions occur primarily through digital channels. Their adoption is driven not only by operational considerations such as reducing response time, handling large volumes of enquiries, and lowering service costs, but also by the need to enhance customer experience in highly competitive digital markets (Omoge et al., 2022; Rahman et al., 2023). However, the value of AI chatbots extends beyond efficiency gains. Studies suggest that their ability to provide instant support, improve accessibility, and maintain continuous customer engagement contributes significantly to customer loyalty by fostering positive service experiences and encouraging continued platform usage, repeat patronage, and customer referrals (Inala & Somu, 2024; Sheth et al., 2022). This indicates that AI chatbots function not merely as cost-saving technologies but as strategic relationship-management tools that strengthen long-term customer retention in mobile FinTech services. The foregoing viewpoint suggests that as an AI-driven customer service strategy, AI chatbot could substantially enhance customer loyalty in the banking context. This viewpoint aligns with the study of Adekunle (2025), which revealed that chatbot adoption has a significant positive effect on customer patronage and retention in Nigerian commercial banks. This is also supported by the study of Mohammed and Okechukwu (2025), which revealed that AI-driven chatbots significantly increase customer satisfaction in banks by reducing response time. Hence, it was hypothesized that:

H_1: AI chatbot has a significant effect on customer loyalty towards mobile FinTech service providers in Calabar.

Personalized service experience and customer loyalty

Personalized service experience is widely regarded as a customer-focused strategy that uses artificial intelligence and data analytics to tailor services to individual customer needs. While Uzoamaka and Ade (2026) emphasised the role of AI and customer data in customizing products, and interactions, Almustafa et al. (2023) focused on the use of behavioural insights to provide personalised recommendations, financial solutions, and support. Similarly, Okoliko et al. (2023) highlighted the ability of intelligent systems to analyze customer profiles and deliver relevant services that enhance convenience and satisfaction, whereas Zungu et al. (2025) viewed personalization as a digital service mechanism through which AI adapts service delivery to individual customer requirements. Although these definitions differ in scope, they collectively suggest that personalized service experience extends beyond service customization to encompass the strategic use of customer insights to create more relevant, responsive, and value-driven interactions.

The significance of personalized service experience is particularly evident in the mobile FinTech service industry, where customers exhibit diverse financial behaviours, preferences, and service expectations. Its adoption is motivated not only by the need to improve service relevance but also by the growing demand for customer-centred digital experiences in an increasingly competitive market (Okoliko et al., 2023). Consequently, mobile FinTech providers employ AI-powered personalization tools to deliver tailored financial advice, customised savings recommendations, spending alerts, targeted promotions, and adaptive user interfaces that enhance convenience and user engagement (Udodiugwu et al., 2024; Hwang et al., 2026). However, the value of personalization extends beyond improving service efficiency. Research indicates that personalized interactions increase customers' perceived value of the service, strengthen emotional attachment to the platform, and enhance satisfaction, thereby fostering continued usage, repeat patronage, positive word-of-mouth, and stronger customer loyalty (Hussain, 2024; Uzoamaka & Ade, 2026). The foregoing viewpoint suggests that as an AI-driven customer service strategy, personalized service experience could substantially enhance customer loyalty in the banking context. This viewpoint aligns with the study of Junaedi et al. (2024), which reveals that AI personalized service had a significant positive effect on customer loyalty in Indonesian banking sector. The viewpoint is also backed by the study of Al-Araj et al. (2022), which revealed that service personalization significantly improves service quality and customer satisfaction in the Jordanian banking context. Hence, it was hypothesized that:

H_2: Personalized service experience has a significant effect on customer loyalty towards mobile FinTech service providers in Calabar.

Quick service automation and customer loyalty

The concept of quick service automation has attracted increasing attention as financial service providers seek to meet rising customer expectations for speed and convenience. Existing definitions largely converge on the role of artificial intelligence in streamlining service

delivery, although they emphasize different dimensions of the concept. Mohammed and Okechukwu (2025) associated quick service automation with the automated execution of service tasks, transaction processing, and request resolution with limited human involvement. In contrast, Olota et al. (2025) stressed its contribution to real-time service delivery and operational efficiency, while Oyetunji (2024) and Abdul et al. (2025) focused on its capacity to accelerate service processes and minimize customer waiting time. Taken together, these perspectives suggest that quick service automation is not merely concerned with replacing manual processes but with enhancing service responsiveness through intelligent and efficient digital systems.

As such, within the mobile FinTech industry, the relevance of quick service automation is reinforced by customers' growing preference for immediate and uninterrupted access to financial services. As digital platforms increasingly compete on service speed and user experience, FinTech providers have adopted automated solutions to support instant fund transfers, self-service account functions, automated complaint resolution, and real-time transaction approvals (Okeke, 2025; Olumoyegun et al., 2024). While these applications improve operational efficiency, their strategic value lies in their ability to reduce customer effort and enhance service convenience. Evidence suggests that when customers consistently receive prompt and reliable service, they are more likely to develop favourable perceptions of the platform, remain engaged with the service, and continue their patronage over time (Adekunle, 2025; Olota et al., 2025). The foregoing viewpoint suggests that as an AI-driven customer service strategy, quick service automation could substantially enhance customer loyalty in the banking context. This viewpoint aligns with the study of Singh and Singh (2024), which revealed that quick service automation significantly improves customer satisfaction and perceived efficiency in Indian banks. The viewpoint also aligns with the study of Junaedi et al. (2024), which reveals that quick service automation had a significant positive effect on customer loyalty in Indonesian banking sector. Hence, it was hypothesized that:

H_3: Quick service automation has a significant effect on customer loyalty towards mobile FinTech service providers in Calabar.

AI security infrastructure and customer loyalty

AI security infrastructure refers to the application of artificial intelligence technologies to safeguard customer data, accounts, and financial transactions against fraud, cyber threats, and unauthorized access (Abdulsalam & Tajudeen, 2024). It has also been defined as a set of intelligent security mechanisms that use machine learning, predictive analytics, and automated monitoring systems to detect, prevent, and respond to security risks in digital financial environments (Rahman et al., 2023). Similarly, Sheth et al. (2022) and Inala and Somu (2024) described AI security infrastructure as AI-enabled security architecture that enhances transaction safety through real-time threat detection, risk assessment, and authentication processes. The common element across these definitions is that AI security infrastructure

leverages intelligent technologies to strengthen the protection, reliability, and trustworthiness of digital financial services.

In the mobile FinTech industry, where financial transactions are conducted entirely through digital channels, security remains a critical concern because customers require assurance that their personal information and financial assets are adequately protected. Consequently, mobile FinTech service providers increasingly deploy AI-powered security solutions such as biometric authentication, fraud detection systems, suspicious activity alerts, and automated risk monitoring tools to strengthen customer confidence in their platforms (Omoge et al., 2022; Manser et al., 2021). By enhancing transaction security, reducing perceived risk, and building customer trust, AI security infrastructure encourages continued platform usage, strengthens customer commitment, and ultimately promotes greater customer loyalty towards mobile FinTech service providers (Hwang et al., 2026; Rahman et al., 2023). The foregoing viewpoint suggests that as an AI-driven customer service strategy, AI security infrastructure could substantially enhance customer loyalty in the banking context. This viewpoint aligns with the study of Al-Araj et al. (2022), which revealed that AI security system significantly improves service quality and customer satisfaction in the Jordanian banking context. The viewpoint is also backed by the study of Singh and Singh (2024), which revealed that AI security system significantly improves customer satisfaction and perceived efficiency in Indian banks. Hence, it was hypothesized that:

H_4: AI security infrastructure has a significant effect on customer loyalty towards mobile FinTech service providers in Calabar.

Theoretical Framework

This study is anchored on the Commitment-Trust Theory (CTT) developed by Morgan and Hunt (1994). The theory posits that successful relationship marketing depends primarily on two key variables (commitment and trust) which are fundamental in developing and sustaining long-term relationships between service providers and customers. According to the theory, customers are more likely to remain loyal to an organisation when they perceive the relationship as trustworthy, reliable, and beneficial. Trust reduces customers' perceptions of risk and uncertainty, while commitment reflects their willingness to maintain an ongoing relationship with a service provider despite the availability of competing alternatives (Morgan & Hunt, 1994). Consequently, organisations that consistently provide reliable, secure, responsive, and customer-oriented services are more likely to strengthen customer commitment and foster long-term loyalty (Liu et al., 2025).

The Commitment-Trust Theory has been widely applied in marketing, electronic commerce, digital banking, and financial technology research to explain customer relationship quality, retention, and loyalty (Khanam, 2026; Saha & Jublee, 2025; Field et al., 2026). In the context of this study, the theory provides an appropriate framework for explaining how AI-driven customer service influences customer loyalty towards mobile FinTech service providers. AI chatbots enhance responsiveness and accessibility, personalized service experiences improve

customers' perceptions of care and relevance, quick service automation increases convenience and service efficiency, while AI security infrastructure strengthens confidence through secure transactions and fraud protection. Collectively, these AI-enabled service dimensions promote customer trust and reinforce customers' commitment to maintaining long-term relationships with their preferred mobile FinTech service providers. The theory therefore provides a robust explanation of how AI-driven customer service contributes to customer loyalty by strengthening the quality of customer-provider relationships within Nigeria's mobile FinTech sector.

Review of Empirical Studies and Conceptual Framework

The empirical literature on artificial intelligence in Nigeria's financial services sector (See Table 1) shows a clear concentration of research around traditional banking institutions and general performance outcomes rather than mobile FinTech customer loyalty. Collectively, Nigerian studies (Okoliko et al., 2023; Udodiugwu et al., 2024; Okeke, 2025; Olota et al., 2025; Mohammed & Okechukwu, 2025; Oyetunji, 2024) consistently demonstrate that AI improves customer experience, satisfaction, operational efficiency, and bank performance through tools such as chatbots, digital payment systems, automation, and analytics. However, this body of work remains methodologically and conceptually narrow because it repeatedly treats AI as a general construct or focuses on single tools rather than developing integrated AI-driven customer service models. Even where specific dimensions are considered, such as chatbots (Adekunle, 2025), biometric authentication (Abinabo et al., 2025), or customer-centric AI (Uzoamaka & Ade, 2026), they are examined in isolation and not combined into a unified explanatory framework that captures AI chatbot, personalized service experience, quick service automation, and AI security infrastructure simultaneously.

A more critical limitation is that most Nigerian studies are anchored on short-term perceptual outcomes such as customer satisfaction, engagement, retention, and operational performance (Okoliko et al., 2023; Olota et al., 2025; Abdul et al., 2025; Mohammed & Okechukwu, 2025), while customer loyalty as a long-term behavioural outcome is largely under-examined. Only limited Nigerian evidence directly addresses loyalty (e.g., Olumoyegun et al., 2024), yet even this does not capture AI-driven customer service as a multidimensional construct. This indicates a clear conceptual gap in the Nigerian literature, where the transition from AI-enabled service delivery to sustained customer loyalty is not adequately theorised or empirically tested. More importantly, there is a strong contextual gap because the Nigerian literature is heavily bank-centric, focusing on deposit money banks and commercial banks (Okeke, 2025; Olota et al., 2025; Olumoyegun et al., 2024; Okoliko et al., 2023), with very limited attention to mobile FinTech service providers as a distinct competitive environment. Although Abdul et al. (2025) introduced FinTech into the discussion, their focus remained on customer satisfaction rather than loyalty and did not examine AI-driven customer service dimensions in an integrated manner. This creates a major relevance problem because mobile FinTech platforms operate under different competitive dynamics, including low switching

costs, platform-based competition, and high dependency on digital trust and service speed, which are not fully captured in banking-focused studies.

In contrast, evidence from non-Nigerian contexts (Al-Araj et al., 2022; Junaedi et al., 2024; El-Shihy et al., 2024; Singh & Singh, 2024) shows that AI chatbot systems, personalized service, quick automation, and AI security systems jointly influence customer loyalty, suggesting that these variables should not be treated separately. However, the absence of similar integrated evidence within Nigeria, particularly in the mobile FinTech sector, reveals a clear empirical gap. Therefore, what is missing in the Nigerian literature is not only the application of AI in financial services, but a structured understanding of how specific AI-driven customer service dimensions collectively shape customer loyalty in mobile FinTech environments.

TABLE 1

Empirical review on AI-driven customer service and customer loyalty towards mobile FinTech service providers

Author(s) & Year	Context/Country	Aim of Study	Methodology	Key Findings
Okeke (2025)	Nigeria banking sector	Examine the opportunities and challenges of AI-powered chatbot adoption and its impact on customer experience in Nigerian banks	Conceptual/theoretical review based on existing literature, banking reports, and discussion of chatbot applications in Nigerian banks such as UBA, First Bank, and GTBank	The study found that AI-powered chatbots improved customer engagement in Nigerian banks through faster responses, 24/7 service delivery, automation, and lower operational costs. It also identified key challenges such as poor internet access, cyber-security risks, low digital literacy, customer distrust, and weak regulatory support.
Olota et al. (2025)	Nigeria banking sector	Examine the effect of artificial intelligence on customer satisfaction in Nigerian banks, focusing on digital payment systems and smart banking solutions	Descriptive survey research design; data collected via questionnaire and analysed using PLS-SEM (SmartPLS) with Yamane sample size determination and simple random sampling	Digital payment systems significantly improve service reliability through secure fund transfers and instant payment confirmation. Smart banking solutions positively influence digital support responsiveness through automated account management and personalised financial insights, thereby enhancing overall customer satisfaction in Nigerian banks
Olumoyegun et al. (2024)	Nigeria (selected deposit money banks in Lagos State: First Bank, UBA, Zenith Bank, GTBank	Examine the effect of artificial intelligence, specifically electronic payment systems (electronic bank transfer, digital wallet, mobile pay) and robotic advisory systems (technical competency, revenue stream, financial planning) on customer experience and customer loyalty in selected Nigerian banks	Cross-sectional survey research design using structured questionnaires; sample size of 385 customers determined via Cochran formula; data analysed using multiple regression analysis	Electronic payment systems have a significant positive effect on customer experience, with mobile pay and electronic fund transfer showing the strongest influence. Robotic advisory systems also significantly improve customer loyalty, as technical competency, revenue stream advisory, and financial planning tools all positively enhance repeat patronage and satisfaction

Author(s) & Year	Context/Country	Aim of Study	Methodology	Key Findings
Adekunle (2025)	Nigeria (commercial banks)	Examine the influence of AI-driven products, specifically chatbots, on customer retention and customer patronage of commercial banks in Nigeria.	Cross-sectional research design; data collected from customers of selected commercial banks using structured questionnaires; sample size of 384 determined using Godden formula, with 298 usable responses; analysed using quantitative statistical testing (hypothesis testing).	Chatbot adoption has a significant positive effect on customer retention in Nigerian commercial banks. Customers are more likely to continue patronage when AI-driven banking services improve convenience, self-service efficiency, and service delivery speed
Abdul et al. (2025)	Nigeria (Fintech sector, with focus on Moniepoint Financial Technology	Examine the effect of Industry 4.0 technologies (digital banking platforms, AI, automation) on customer satisfaction	Descriptive survey; questionnaire data from 397 respondents; analysed using PLS-SEM (SmartPLS 3)	Digital banking platforms significantly improve customer convenience. AI enhances customer personalization and automation improves customer efficiency, and all jointly increase customer satisfaction
Oyetunji (2024)	Nigeria (Digital banking sector)	Examine how artificial intelligence (AI) and machine learning (ML) enhance customer experience in Nigerian digital banks.	Conceptual/desk-based review of existing literature and industry reports on AI/ML applications in banking	AI and ML improve customer experience via personalization, fraud detection, real-time monitoring, and 24/7 chatbot support, leading to higher efficiency, lower costs, and improved customer satisfaction.
Mohammed & Okechukwu (2025)	Nigeria (Deposit Money Banks)	Examine effect of AI-driven chatbots and AI-powered customer analytics on customer satisfaction and response time in DMBs.	Descriptive survey; 347 respondents; questionnaire; regression analysis	AI-driven chatbots significantly increase customer satisfaction by reducing response time. AI-powered customer analytics improves service efficiency and responsiveness, enhancing overall customer service performance
Abinabo et al. (2025)	Nigeria (Deposit Money Banks)	Examine the effect of biometric authentication and chatbots (AI tools) on customer engagement, with personalisation as a mediating variable	Cross-sectional survey; structured questionnaire; sample of 119 online banking customers from 5 banks in Abuja; analysed using PLS-SEM (SmartPLS 4)	Biometric authentication has a positive significant effect on customer engagement. Chatbot usage has a negative significant effect. Personalisation has no significant effect and does not mediate the relationships between AI tools and customer engagement
Oladipupo and Oluwabunmi (2026)	Nigerian banking sector	Examine the effect of AI-enabled service quality dimensions on customer loyalty, with customer satisfaction as a mediating variable.	Survey research; 385 questionnaires distributed, 317 valid responses; analysed using SmartPLS (PLS-SEM	AI-enabled service quality significantly improves customer loyalty. It also significantly improves customer satisfaction. Customer satisfaction significantly increases loyalty and fully mediates the relationship between AI-enabled service quality and customer loyalty
Abdulquadri et al. (2021)	Nigeria financial services sector	Examine how chatbots drive digital transformation, customer engagement, and financial inclusion in Nigerian banks.	Qualitative/interpretive approach using the Search–Access–Test (S-A-T) model to assess chatbot adoption in banks	Most Nigerian banks use chatbots (mainly via WhatsApp) to improve customer engagement and inclusion. However, chatbots are limited by predefined responses, weak multilingual support, and

Author(s) & Year	Context/Country	Aim of Study	Methodology	Key Findings
				lack of local language integration, reducing overall effectiveness
Uzoamaka and Ade (2026)	Nigeria banking sector	Examine how customer-centric AI and risk management AI predict banking operational optimization, service quality, and compliance	Predictive research design; multiple regression analysis; survey of 444 banking professionals across top-tier banks in Nigeria using Likert-scale questionnaire.	Customer-centric AI significantly improves service delivery and responsiveness. Risk management AI significantly enhances fraud detection and regulatory compliance. Both AI applications significantly predict improved operational efficiency, customer satisfaction, and banking process optimization
Okoliko et al. (2023)	Nigeria banking sector	Examine the effect of artificial intelligence adoption on bank performance in selected Deposit Money Banks	Cross-sectional descriptive survey; structured questionnaire; census of 135 bank employees; analysed using multiple regression	Artificial intelligence adoption significantly improves efficiency, effectiveness, productivity, customer satisfaction, and overall performance of deposit money banks in Abuja
Udodiugwu et al. (2024)	Nigeria banking sector	Examine the effect of artificial intelligence (customer service AI and cybersecurity AI) on bank performance in Nigeria.	Survey design; 128 bank employees from Access Bank, Fidelity Bank, GTBank, and First Bank; structured Likert-scale questionnaire; analysed using linear regression (SPSS v23).	AI in customer service improves non-financial performance of banks, while cybersecurity AI strengthens financial performance. Overall, AI adoption enhances bank performance in Nigeria.
El-Shihy et al. (2024)	Egyptian Banking sector	Examine the effect of AI chatbot service quality on customer loyalty, with customer satisfaction as a mediating variable in banking fintech services.	Quantitative descriptive survey; online questionnaire; 729 respondents using judgemental sampling; analysed using SmartPLS-SEM.	AI chatbot service quality significantly improves customer satisfaction and customer loyalty. Customer satisfaction also mediates the relationship between chatbot service quality and customer loyalty, confirming the importance of chatbot effectiveness in fintech-driven banking services.
Junaedi et al. (2024)	Indonesian banking sector	Examine the impact of AI-based customer service applications (chatbots, personalized service, fraud detection systems and quick service automation) on customer loyalty	Cross-sectional survey; structured questionnaire; sample of 128 bank customers in Jakarta; analysed using PLS-SEM (SmartPLS 4)	Chatbots, personalized service, fraud detection systems and quick service automation had significant positive effects on customer loyalty in Indonesian banking sector
Al-Araj et al. (2022)	Jordanian banking sector	Examine the effect of artificial intelligence (service personalization, quick service automation and AI security system) on service quality and customer satisfaction in the banking sector.	Quantitative survey; 270 bank customers; questionnaire data analysed using SPSS and exploratory factor analysis with the SERVQUAL framework.	Artificial intelligence (service personalization, quick service automation and AI security system) significantly improves service quality and customer satisfaction in banking. AI reduces employee workload and enhances banking services (e.g., fraud detection, risk assessment)

Author(s) & Year	Context/Country	Aim of Study	Methodology	Key Findings
Singh and Singh (2024)	Indian banking industry	Examine the effect of AI-powered customer service (quick service automation, AI security system, chatbot and personalization) on customer loyalty, with customer satisfaction and perceived efficiency as mediators.	Cross-sectional survey (2023); 373 respondents with recent AI service experience; structured electronic questionnaire; analysed using PLS-SEM/path modelling	AI-powered customer service ((quick service automation, AI security system, chatbot and personalization) significantly improves customer satisfaction and perceived efficiency. Both satisfaction and efficiency strongly drive customer loyalty

Source: Literature review

Based on the gaps identified in existing relevant studies, this study investigated the relationship between AI-driven customer service and customer loyalty towards mobile FinTech service providers in Nigeria. The independent variable (AI-driven customer service) was conceptualized as a multidimensional construct comprising four key dimensions: AI chatbot, personalized service experience, quick service automation, and AI security infrastructure. The AI chatbot dimension reflected the use of conversational AI tools that enabled direct customer interaction with mobile FinTech platforms, including in-app chatbots, automated conversation responses, voice-assisted systems, and integrated in-app support services (El-Shihy et al., 2024). Personalised service experience dimension captured AI-enabled customization of financial services based on individual customer behaviour and preferences, including personalized savings recommendations, loan suggestions, spending alerts, transaction summaries, customized app interfaces, and targeted service offers (Junaedi et al., 2024). Quick service automation represented the speed and efficiency of AI-enabled service delivery processes within mobile FinTech platforms, including instant fund transfers, automated complaint resolution, self-service account management, rapid transaction approvals, and real-time account statement generation (Al-Araj et al., 2022). AI security infrastructure dimension reflected AI-based mechanisms designed to protect customer accounts and transactions, including biometric authentication for login and transactions, automated fraud detection alerts, suspicious activity notifications, and real-time security risk monitoring systems (Singh & Singh, 2024). The dependent variable, customer loyalty, was operationalized through customer satisfaction, regular usage behaviour, future patronage intention, and customer referral tendencies (James & Inyang, 2025). As conceptualized in the study framework (FIG. 1), it was expected that these AI-driven customer service dimensions jointly influenced customer loyalty towards mobile FinTech service providers in Nigeria.

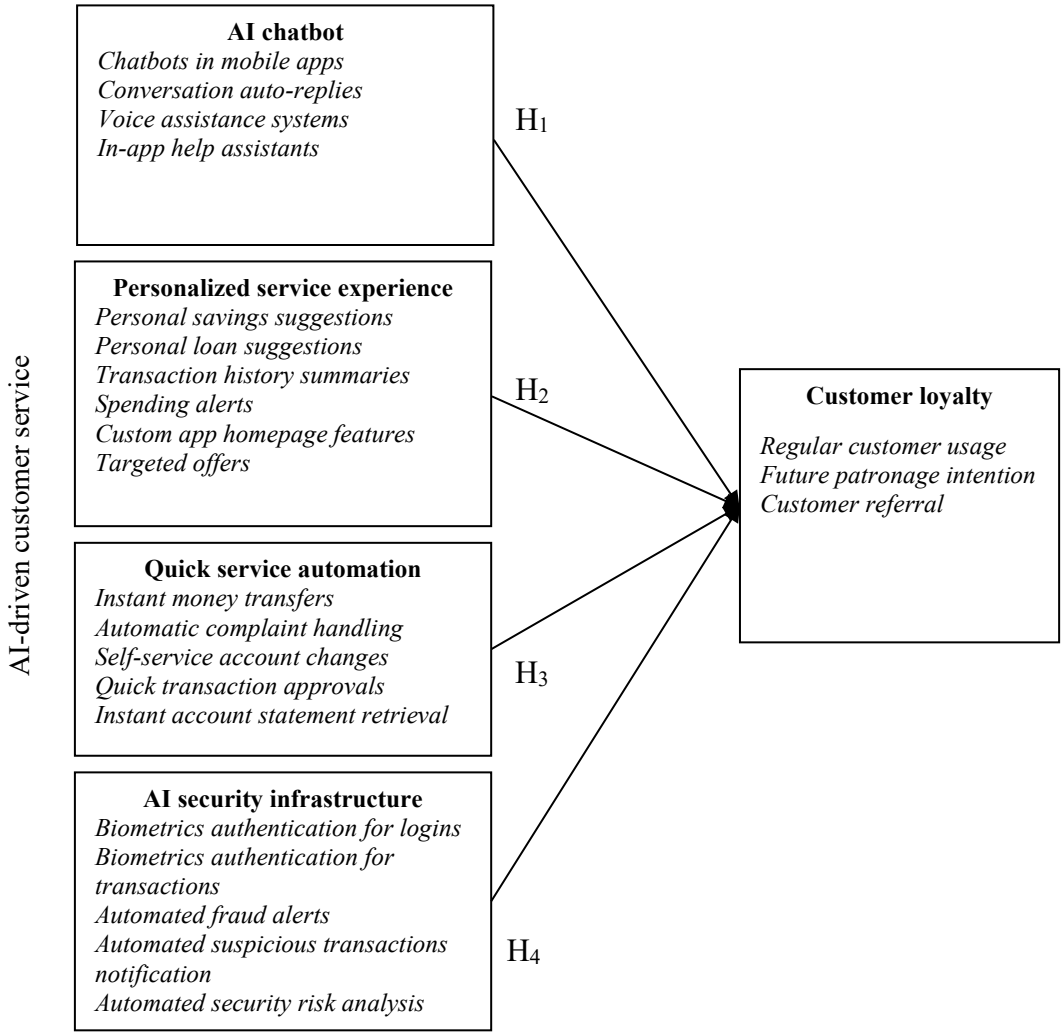


FIG. 1: Conceptual model of the study

Source: Independent variable parameters adapted from El-Shihy et al. (2024); Junaedi et al. (2024); Al-Araj et al. (2022); Singh and Singh (2024). Dependent variable parameters adapted from James and Inyang (2025).

MATERIALS AND METHODS

Research design

The study employed a cross-sectional survey research design to collect primary data from users of mobile FinTech platforms at a specific point in time. This design was considered appropriate because it enabled the researcher to obtain data directly from a large and diverse group of mobile FinTech users regarding their perceptions and experiences with AI-driven customer service. It also provided an effective basis for examining the relationships between the study's variables within a defined study period. Furthermore, the design facilitated the generation of empirical evidence on how AI-enabled customer service influences customer

loyalty among mobile FinTech users in Nigeria without requiring repeated observations over time.

Population and sample

The target population of the study consisted of all users of mobile FinTech platforms in Calabar, Cross River State, Nigeria. This population was considered indeterminate because there is no official or unified database capturing the exact number of mobile FinTech users in the area as of 2026. As a result, the Topman sample size determination procedure was applied to estimate an appropriate sample size for the study (Yamane, 1973), which produced a total of 357 mobile FinTech users for data collection:

$$n = \frac{Z^2Pq}{e^2}$$

Where
- n: Sample size required
- Z: Tabular statistical unit (1.96)
- P: Probability of positive response (0.633)
- q: Probability of negative response (0.367)
- e: Margin of error (5%)

To determine the probabilities of positive and negative responses (P and q), a pilot survey was conducted in May 2026 prior to the main data collection. This involved a random selection of 30 bank customers along Calabar Road who were asked whether they actively used mobile FinTech platforms. From the responses obtained, 19 respondents (63.3%) confirmed that they used mobile FinTech services, while 11 respondents (36.7%) indicated a preference for conventional banking services. Based on these results, the probability of positive responses (P) was calculated as 0.633, while the probability of negative responses (q) was 0.367. These values were subsequently substituted into the Topman sample size formula to determine the appropriate sample size for the study as follows:

$$n = \frac{1.96^2 (0.633 \times 0.367)}{0.05^2}$$

$$= \frac{3.8416 (0.2323)}{0.0025}$$

$$= \frac{0.8924}{0.0025}$$

$$= 356.96$$

$\therefore n = 357$ mobile FinTech platform users approximately

Sampling technique, data collection, instrument validity and reliability

Having determined the required sample size, purposive sampling was used to select respondents who could provide relevant and informed responses for the study. Only individuals who had actively used mobile FinTech platforms such as OPay, PalmPay, and Moniepoint for at least one year were considered eligible. Field data collection was conducted

along Calabar Road, a busy financial corridor in Calabar where frequent banking and digital financial transactions occur. Prospective participants were first screened through brief questions on their history of mobile FinTech usage, and only those who met the inclusion criterion were recruited, while others were excluded. This approach ensured that responses were obtained from experienced users, thereby improving the relevance and reliability of the data collected. Nevertheless, because the respondents were purposively selected from a single location within Calabar, the sample may not fully represent all mobile FinTech users in other parts of Cross River State or Nigeria. Consequently, the findings should be interpreted within the context of the study population, and caution should be exercised when generalising the results beyond similar urban mobile FinTech user groups. Data for the study were gathered using a structured questionnaire designed on a five-point Likert scale. The items were adapted from existing validated studies and aligned with the study variables: AI chatbot, personalized service experience, quick service automation, AI security infrastructure, and customer loyalty. Content validity was established through expert review to ensure clarity, relevance, and alignment with the research objectives, while internal consistency was assessed using Cronbach's alpha reliability test. Prior to the main survey, a pilot test was carried out involving 30 respondents selected from conventional bank customers who were not part of the final sample. These participants were exposed to the draft questionnaire to evaluate item clarity, comprehension, and consistency of responses. The reliability results from the pilot test are presented in Table 2. The reliability coefficients indicate strong internal consistency across all constructs, as all values exceeded the recommended threshold of 0.70, confirming that the instrument was suitable for full-scale data collection.

TABLE 2
Summary of reliability test (Cronbach's alpha)

Construct	Number of Items	Cronbach's Alpha
AI Chatbot	4	0.783
Personalized service experience	6	0.858
Quick service automation	5	0.824
AI security infrastructure	5	0.846
Customer loyalty	4	0.786
	24	

Source: Researchers' analysis via SPSS (2026)

Data analysis techniques

The data obtained from the respondents were coded and analysed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistical techniques, including frequencies, percentages, means, and standard deviations, were employed to summarise the demographic characteristics of respondents and describe their perceptions of AI chatbot, personalized service experience, quick service automation, AI security infrastructure, and customer loyalty. Furthermore, multiple linear regression analysis was used to test the hypotheses of the study

and determine the individual and combined effects of the AI-driven customer service dimensions on customer loyalty among users of mobile FinTech platforms in Calabar, Cross River State. This analytical technique was considered appropriate because it enabled the study to assess the predictive influence of multiple independent variables on a single dependent variable simultaneously. The regression model states thus:

$$Y = a + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + e$$

Where:

$Y =$ Dependent variable (Customer loyalty)

$a =$ The intercept

$\beta_1, \beta_2, \beta_3, \beta_4 =$ Coefficients of the independent variable

$X_1, X_2, X_3, X_4 =$ Parameters of independent variable (AI chatbot, personalized service experience, quick service automation and AI security infrastructure)

$e =$ Error margin (5 percent)

ANALYSIS AND FINDINGS

A total of 357 questionnaires were administered to selected users of mobile FinTech platforms in Calabar, Cross River State. Following the retrieval and screening process, 342 copies were found to be properly completed and suitable for analysis, representing a response rate of 95.8 percent. The remaining 15 questionnaire copies, accounting for 4.2 percent of the total distributed copies, were not recovered and were therefore excluded from the study. Consequently, the analysis and findings presented in this study were based on the valid responses obtained from 342 mobile FinTech users.

TABLE 3

Descriptive statistics of the study's variables

	No. of items	N	Mean	Std. Deviation
AI chatbot	4	342	3.8319	1.20721
Personalized service experience	6	342	3.5351	1.11145
Quick service automation	5	342	3.6158	1.15593
AI security infrastructure	5	342	3.6655	.93126
Customer loyalty	4	342	3.6996	1.10443
Valid N (listwise)		342		

Source: Researchers' analysis via SPSS (2026)

The descriptive statistics presented in Table 3 were derived from responses measured on a 5-point Likert scale, where 5 indicates "strongly agree" and 1 indicates "strongly disagree." The table provides a summary of respondents' perceptions of AI chatbot (4 items), personalized service experience (6 items), quick service automation (5 items), AI security infrastructure (5 items), and customer loyalty (4 items). The mean scores for all the variables exceed the benchmark value of 3.0, suggesting that respondents generally held favourable perceptions of the AI-driven customer service dimensions and customer loyalty within the mobile FinTech

sector. Among the independent variables, AI chatbot recorded the highest mean score (3.8319), indicating that respondents largely agreed that chatbot features effectively support customer interactions on mobile FinTech platforms. This was followed by AI security infrastructure (mean = 3.6655), quick service automation (mean = 3.6158), and personalized service experience (mean = 3.5351), implying positive evaluations of these AI-enabled service features. Customer loyalty recorded a mean score of 3.6996, which suggests that users generally exhibited favourable loyalty tendencies towards their mobile FinTech service providers.

The standard deviation values reveal varying levels of dispersion in respondents' opinions across the study variables. AI chatbot recorded the highest standard deviation (1.20721), indicating relatively greater differences in respondents' experiences and perceptions regarding chatbot services. Quick service automation (1.15593) and personalized service experience (1.11145) also showed noticeable variability, suggesting that the extent to which respondents experienced automated and personalized services differed across users. Customer loyalty recorded a standard deviation of 1.10443, indicating that loyalty levels were not entirely uniform among respondents. In contrast, AI security infrastructure exhibited the lowest standard deviation (0.93126), reflecting a higher degree of consensus among respondents regarding the effectiveness of security-related AI features. Overall, the findings suggest that while respondents generally perceived AI-driven customer service positively and reported favourable loyalty levels, variations in user experiences across the different AI dimensions may account for the observed differences in loyalty behaviour.

Hypothesis one

Ho: AI chatbot has no significant effect on customer loyalty towards mobile FinTech service providers in Calabar.

Hypothesis two

Ho: Personalized service experience has no significant effect on customer loyalty towards mobile FinTech service providers in Calabar.

Hypothesis three

Ho: Quick service automation has no significant effect on customer loyalty towards mobile FinTech service providers in Calabar.

Hypothesis four

Ho: AI security infrastructure has no significant effect on customer loyalty towards mobile FinTech service providers in Calabar.

Independent variables: AI chatbot, personalized service experience, quick service automation and AI security infrastructure

Dependent variable: Customer loyalty

Test statistic: Multiple linear regression

Decision criteria: Accept the alternative hypothesis if ($P < .05$) and reject the null hypothesis, if otherwise.

TABLE 4

Model summary of the effect of AI-driven customer service on customer loyalty towards mobile FinTech service providers in Calabar

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.694[a]	.482	.475	.45033

a. Predictors: (Constant), AI chatbot, personalized service experience, quick service automation and AI security infrastructure

Source: Researchers' analysis via SPSS (2026)

TABLE 5

ANOVA[a] of the effect of AI-driven customer service on customer loyalty towards mobile FinTech service providers in Calabar

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	63.472	4	15.868	78.245	.000[b]
	Residual	68.343	337	.203		
	Total	131.815	341			

a. Dependent Variable: Customer loyalty

b. Predictors: (Constant), AI chatbot, personalized service experience, quick service automation and AI security infrastructure

Source: Researchers' analysis via SPSS (2026)

TABLE 5

Coefficients[a] of the effect of AI-driven customer service on customer loyalty towards mobile FinTech service providers in Calabar

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	2.647	.286		9.246	.000		
	AI chatbot	.349	.066	.677	5.247	.000	.392	1.819
	Personalized service experience	.142	.055	.337	2.593	.010	.291	2.992
	Quick service automation	.184	.046	.170	3.986	.000	.841	1.189
	AI security infrastructure	.376	.033	.479	11.306	.000	.857	1.166

a. Dependent Variable: Customer loyalty

Source: Researchers' analysis via SPSS (2026)

Interpretation

Tables 4, 5, and 6 present the results of the multiple linear regression analysis conducted to examine the effect of AI-driven customer service on customer loyalty towards mobile FinTech

service providers in Calabar. The model summary in Table 4 indicates a strong positive relationship between the predictor variables and customer loyalty, as reflected by the correlation coefficient (R = 0.694). The coefficient of determination (R^2 = 0.482) shows that AI chatbot, personalized service experience, quick service automation, and AI security infrastructure jointly explain 48.2 percent of the variation in customer loyalty, while the remaining 51.8 percent may be attributed to other factors not included in the model. This suggests that AI-driven customer service dimensions make a substantial contribution to explaining customer loyalty among mobile FinTech users. Furthermore, the ANOVA result in Table 5 indicates that the overall regression model is statistically significant (F = 78.245, p = 0.000), demonstrating that the combined effect of the four AI-driven customer service dimensions on customer loyalty is significant and that the model provides a reliable explanation of customer loyalty behaviour in the mobile FinTech sector.

The coefficient estimates presented in Table 6 show that all four dimensions of AI-driven customer service exert positive and statistically significant effects on customer loyalty. AI chatbot has a positive and significant effect on customer loyalty (β = 0.677, p = 0.000), indicating that improvements in chatbot responsiveness, interaction quality, and problem-solving capability significantly enhance customer loyalty towards mobile FinTech service providers. Personalized service experience also exerts a positive and significant influence (β = 0.337, p = 0.010), suggesting that customers are more likely to remain loyal when services are tailored to their individual preferences and financial needs. Similarly, quick service automation significantly predicts customer loyalty (β = 0.170, p = 0.000), implying that faster transaction processing and prompt service delivery encourage customers to continue using mobile FinTech services. AI security infrastructure equally demonstrates a positive and significant effect on customer loyalty (β = 0.479, p = 0.000), highlighting the importance of secure transactions, fraud prevention, and robust data protection in fostering customer confidence and long-term commitment. Based on the decision criterion that the null hypothesis should be rejected when $p < 0.05$, all four null hypotheses are rejected. The findings therefore confirm that AI chatbot, personalized service experience, quick service automation, and AI security infrastructure each have significant positive effects on customer loyalty towards mobile FinTech service providers in Calabar. Among the predictor variables, AI chatbot exerts the strongest influence on customer loyalty, followed by AI security infrastructure, personalized service experience, and quick service automation. Overall, the findings demonstrate that strengthening AI-driven customer service capabilities can significantly improve customer loyalty within the mobile FinTech sector.

Discussion of Findings

AI chatbot and customer loyalty

The first finding of this study revealed that AI chatbot has a significant positive effect on customer loyalty towards mobile FinTech service providers in Calabar. This finding suggests that beyond providing automated responses, AI chatbots function as an important relationship-

building mechanism by facilitating immediate communication, continuous support, and timely problem resolution. In the mobile FinTech environment, where customers rely almost entirely on digital interactions, the ability to obtain instant assistance reduces uncertainty and enhances users' confidence in the service provider. This explains why customers who perceive chatbot interactions as responsive and helpful are more likely to continue using the platform and recommend it to others. The finding corroborates the studies of Adekunle (2025) and Mohammed and Okechukwu (2025), which reported that chatbot adoption improves customer retention, satisfaction, and patronage within the Nigerian banking sector.

Notably, AI chatbot recorded the strongest effect among all the AI-driven customer service dimensions examined ($\beta = 0.677$). This indicates that customers place greater value on continuous interaction and immediate service support than on other AI-enabled features. Given that financial transactions often involve urgent enquiries, failed transfers, account restrictions, or payment confirmations, customers are more likely to remain loyal to service providers that can resolve issues quickly and efficiently. From the perspective of the Commitment-Trust Theory (Morgan & Hunt, 1994), responsive chatbot interactions strengthen customers' trust by demonstrating service reliability and responsiveness, while repeated positive interactions reinforce customers' commitment to maintaining the relationship. The finding therefore extends the theory by showing that AI-powered conversational technologies are not merely operational tools but strategic relationship-building mechanisms that foster trust, commitment, and ultimately customer loyalty in the mobile FinTech sector.

Personalized service experience and customer loyalty

The result for hypothesis two indicated that personalized service experience has a significant positive effect on customer loyalty towards mobile FinTech service providers in Calabar. This implies that when mobile FinTech platforms tailor services to individual users through customized financial recommendations, targeted alerts, and personalized interface features, customers become more willing to maintain long-term relationships with the service provider. Personalization creates the perception that the provider understands individual customer needs rather than offering uniform services to all users, thereby increasing users' emotional attachment and confidence in the platform. The finding is consistent with Junaedi et al. (2024), who reported that AI-based personalization significantly enhances customer loyalty in banking services, and Al-Araj et al. (2022), who found that personalization improves service quality and customer satisfaction in digital banking environments.

Although personalized service experience significantly influenced customer loyalty, its effect ($\beta = 0.337$) was weaker than those of AI chatbot and AI security infrastructure. This suggests that while customers appreciate personalized financial experiences, they prioritise dependable service support and transaction security when deciding whether to remain loyal to a mobile FinTech provider. Within the Commitment-Trust Theory, personalized service strengthens relationship commitment by making customers feel recognized and valued, thereby

encouraging continued patronage. The finding therefore extends the theory by demonstrating that AI-enabled personalization contributes to loyalty through relationship commitment, although its influence may be secondary to factors that directly enhance customer trust and reduce uncertainty.

Quick service automation and customer loyalty

The result for hypothesis three showed that quick service automation has a significant positive effect on customer loyalty towards mobile FinTech service providers in Calabar. This indicates that when mobile FinTech platforms deliver services rapidly through automated transaction processing, complaint resolution, and account updates, customers are more likely to maintain continued engagement with the service provider. Fast and seamless service delivery reduces waiting time and improves overall convenience, thereby enhancing customers' service experience. This finding is consistent with Singh and Singh (2024), who reported that quick service automation enhances customer satisfaction and perceived efficiency in banking services, and Junaedi et al. (2024), who found that automation significantly improves customer loyalty in digital banking contexts.

However, quick service automation exerted the weakest influence among the four predictors ($\beta = 0.170$). A possible explanation is that speed has increasingly become a standard expectation across most mobile FinTech platforms rather than a distinctive competitive advantage. Consequently, customers may perceive rapid service delivery as a basic requirement rather than a unique factor that builds enduring loyalty. From the perspective of the Commitment-Trust Theory, service automation contributes indirectly to customer loyalty by improving service reliability and reinforcing confidence in the provider. Nevertheless, long-term loyalty appears to depend more strongly on AI capabilities that directly strengthen customer trust and relationship quality than on operational efficiency alone.

AI security infrastructure and customer loyalty

The result for hypothesis four revealed that AI security infrastructure has a significant positive effect on customer loyalty towards mobile FinTech service providers in Calabar. This implies that when mobile FinTech platforms deploy robust AI-enabled security mechanisms such as fraud detection systems, biometric authentication, and real-time risk monitoring, customers develop greater confidence in the safety of their financial transactions. Because mobile FinTech services involve sensitive personal and financial information, customers are particularly concerned about fraud, identity theft, and transaction security. Strong AI security systems therefore reduce perceived risk and encourage continued use of the platform. This finding aligns with Al-Araj et al. (2022), who reported that AI security systems significantly enhance service quality and customer satisfaction in banking contexts, and Singh and Singh (2024), who found that AI-driven security systems improve satisfaction and perceived efficiency in digital banking environments.

AI security infrastructure emerged as the second strongest predictor of customer loyalty (β = 0.479), indicating that security assurance is one of the primary determinants of sustained customer relationships in the mobile FinTech sector. This finding suggests that although customers value convenience and personalization, they are unlikely to remain loyal unless they perceive their financial information and transactions to be adequately protected. From the perspective of the Commitment-Trust Theory, secure digital environments strengthen customer trust by reducing perceptions of risk and uncertainty, thereby increasing customers' commitment to maintaining long-term relationships with the service provider. The finding therefore extends the theory by demonstrating that AI-enabled security infrastructure is a critical trust-building mechanism through which digital financial service providers cultivate enduring customer loyalty.

CONCLUSION AND RECOMMENDATIONS

Conclusion

This study examined the relationship between AI-driven customer service and customer loyalty among users of mobile FinTech platforms in Calabar, Cross River State. The study was undertaken in response to the increasing challenge of retaining customers within Nigeria's rapidly expanding mobile FinTech sector, where users have numerous alternatives and can easily switch between service providers. Drawing on data obtained through a cross-sectional survey and analysed using multiple linear regression, the study found that AI chatbot, personalized service experience, quick service automation, and AI security infrastructure are each significantly and positively associated with customer loyalty.

Notwithstanding these findings, caution is required in interpreting the results because the study captured respondents' views at a single point in time and was restricted to mobile FinTech users within Calabar. Consequently, the findings may not fully reflect customer behaviour in other locations or over different periods, and the cross-sectional design does not permit causal inferences. Nevertheless, the results suggest that mobile FinTech providers offering stronger AI-enabled customer service features also tend to report higher levels of customer loyalty. Future research should validate these findings using broader geographical coverage, probability sampling techniques, and longitudinal research designs to establish whether these observed associations remain consistent over time and across different contexts.

Recommendations

On the basis of the findings of the study, we have presented the following practical recommendations:

i. Mobile FinTech service providers should continuously upgrade their AI chatbots with advanced natural language processing capabilities to improve conversational accuracy, contextual understanding, and problem-resolution effectiveness. This will enhance customer loyalty by providing users with faster, more reliable, and more satisfying service experiences that encourage continued platform usage.

ii. There is need for mobile FinTech providers to strengthen their use of customer data analytics and machine learning tools to deliver more relevant financial recommendations, spending insights, and customized service offerings tailored to individual user needs. This will enhance customer loyalty by increasing customers' perception of value and personal relevance, thereby encouraging stronger attachment to the platform.

iii. Mobile FinTech firms should further automate routine service processes such as transaction approvals, complaint resolution, account updates, and information retrieval to minimize service delays and operational bottlenecks. This will enhance customer loyalty by improving service speed and convenience, making customers more likely to remain with providers that consistently meet their expectations.

iv. It is imperative for mobile FinTech providers to regularly update and reinforce AI-based security systems through enhanced biometric verification, real-time fraud detection, and predictive risk monitoring technologies. This will enhance customer loyalty by strengthening customer confidence in the safety of their funds and personal information, thereby increasing trust and long-term commitment to the platform.

Contribution to knowledge

This study contributes to existing knowledge on artificial intelligence and customer loyalty by providing empirical evidence that AI chatbot, personalized service experience, quick service automation, and AI security infrastructure significantly influence customer loyalty towards mobile FinTech service providers. The study bridges an important gap in the Nigerian literature, where previous studies largely focused on customer satisfaction, customer experience, customer engagement, and organizational performance, with limited attention given to customer loyalty within the mobile FinTech context. The study also contributes theoretically by confirming the relevance of the Technology–Organisation–Environment (TOE) framework in explaining the outcomes of AI adoption in digital financial services. Specifically, the findings extend the framework by demonstrating that AI-driven customer service technologies not only improve service delivery but also strengthen customer loyalty through increased retention, continued usage, and customer referrals.

REFERENCES

Abdul, F. A., Olota, O., Balogun, E., & Babawale, O. (2025). Industry 4.0 and customers satisfaction; evidence from fintech in emerging economy. *Revista Científica Profundidad Construyendo Futuro, 22*(22), 127-144.

Abdulquadri, A., Mogaji, E., Kieu, T. A., & Nguyen, N. P. (2021). Digital transformation in financial services provision: A Nigerian perspective to the adoption of chatbot. *Journal of Enterprising Communities: People and Places in the Global Economy, 15*(2), 258-281.

Abdulsalam, T. A., & Tajudeen, R. B. (2024). Artificial intelligence (AI) in the banking industry: A review of service areas and customer service journeys in emerging economies. *Business & Management Compass, 68*(3), 19-43.

Abinabo, P., Shagari, J. N., & Mashi, M. S. (2025). Impact of artificial intelligence on customer engagement from selected banks in Abuja Metropolis, Nigeria: A mediating role of personalization. *International Journal of Business Sustainability, 1*(2), 72-91.

Adegbesan, E. (2025, July 28). *E-payment transactions rise 24% to N317.2trn in Q1'25*. Vanguard Nigeria. https://www.vanguardngr.com/2025/07/e-payment-transactions-rise-24-to-n317-2trn-in-q125/

Adejumoh, J. (2025, July 29). *Commercial banks dormant accounts rise to 33.3m in March 2025 – NIBSS*. Independent Newspaper Nigeria. https://independent.ng/commercial-banks-dormant-accounts-rise-to-33-3m-in-march-2025-nibss/

Adekunle, F. B. (2025). Artificial intelligence-driven and customer patronage of commercial banks in Nigeria. *Ilorin Journal of Finance, 9*(2), 58-64.

Ademe-Godwin, D., & Akpan, G. D. (2023). Perceived convenience and customer patronage of fintech firms in Port Harcourt. *European Scholar Journal, 4*(4), 106-115.

Al-Araj, R. E., Haddad, H. O., Shehadeh, M. A., Hasan, E., & Nawaiseh, M. Y. (2022). The effect of artificial intelligence on service quality and customer satisfaction in Jordanian banking sector. *WSEAS Transactions on Business and Economics, 19*(12), 1929-1947.

Almustafa, E., Assaf, A., & Allahham, M. (2023). Implementation of artificial intelligence for financial process innovation of commercial banks. *Revista de Gestão Social e Ambiental, 17*(9), 1-17.

Alnsour, I. R. (2022). Impact of fintech over consumer experience and loyalty intentions: an empirical study on Jordanian Islamic Banks. *Cogent Business & Management, 9*(1), 2141098.

Alwi, S., Alpandi, R. M., Salleh, M. N. M., & Najihah, I. (2019). An empirical study on the customers' satisfaction on FinTech mobile payment services in Malaysia. *International Journal of Advanced Science and Technology, 28*(16), 390-400.

Baber, H. (2020). Impact of FinTech on customer retention in Islamic banks of Malaysia. *International Journal of Business and Systems Research, 14*(2), 217-227.

Bilgihan, A., Ostinelli, M., Zhang, Y., & Lorenz, M. (2025). Artificial intelligence (AI) agents and the future of customer loyalty. *International Journal of Contemporary Hospitality Management, 37*(9), 3240-3262.

El-Shihy, D., Abdelraouf, M., Hegazy, M., & Hassan, N. (2024). The influence of AI chatbots in fintech services on customer loyalty within the banking industry. *Future of Business Administration, 3*(1), 16-28. https://doi.org/10.33422/fba.v3i1.644

Etuk, I. U., Abdullahi, S., Ewah, S. F., & Edim, E. J. (2025). Dimensionality of customers' loyalty towards digital banking services in Calabar metropolis: A principal component analysis. *African Journal of Humanities and Contemporary Education Research, 19*(1), 134-164.

Field, J., Struweg, I., & Ward, I. (2026). Digital transformation and relationship quality in automotive retail: Testing commitment-trust theory in hybrid service environments. *Acta Commercii-Independent Research Journal in the Management Sciences, 26*(1), 1570-1592.

Hossain, M. I., & Azam, M. S. (2023). The effects of technology, organisation and environmental factors on small firm entry to electronic marketplace: A developing country perspective. *International Journal of Electronic Business, 18*(1), 77-107.

Hussain, M. A. (2024). A study on the impact of artificial intelligence (AI) technology-enabled digital banking services on consumer loyalty. A Conceptual Framework, Educational Administration: Theory and Practice, 30(4), 6845-6853.

Hwang, B. N., Jitanugoon, S., & Puntha, P. (2026). AI integration in service delivery: enhancing business and sustainability performance amid challenges. *Journal of Services Marketing, 40*(2), 263-281.

Ighomereho, O. S., Afolabi, T. S., & Oluwakoya, A. O. (2023). Impact of E-service quality on customer satisfaction: A study of internet banking for general and maritime services in Nigeria. *Journal of Financial Services Marketing, 28*(3), 488-501.

Inala, R., & Somu, B. (2024). Agentic AI in retail banking: Redefining customer service and financial decision-making. *Journal of Artificial Intelligence and Big Data Disciplines, 1*(1), 56-71

James, E. E., & Inyang, I. B. (2025). Food quality dimensions and customers' loyalty towards fast-food restaurants. *Multidisciplinary Journal of Management and Social Sciences, 2*(3), 56-71

Junaedi, A. T., Suhardjo, S., Andi, A., Putri, N. Y., Hutahuruk, M. B., Renaldo, N., ... & Cecilia, C. (2024). Use of AI-based banking applications for customer service. *Luxury: Landscape of Business Administration, 2*(2), 127-136.

Karim, R. A., Sobhani, F. A., Rabiul, M. K., Lepee, N. J., Kabir, M. R., & Chowdhury, M. A. M. (2022). Linking fintech payment services and customer loyalty intention in the hospitality industry: The mediating role of customer experience and attitude. *Sustainability, 14*(24), 16481.

Khanam, Z. (2026). Fairness, trust and commitment in pharmaceutical retailer–supplier coordination. *International Journal of Retail & Distribution Management*, *4*, 1-15.

Kini, A. N., Savitha, B., & Hawaldar, I. T. (2024). Brand loyalty in FinTech services: The role of self-concept, customer engagement behavior and self-brand connection. *Journal of Open Innovation: Technology, Market, and Complexity, 10*(1), 100240.

Liu, K., Li, Q., & Tao, D. (2025). Determinants of continuous use intention of smart healthcare services: Evidence from a commitment-trust theory perspective. *Health Informatics Journal, 31*(3), 14604582251381156.

Malik, S., Chadhar, M., Vatanasakdakul, S., & Chetty, M. (2021). Factors affecting the organizational adoption of blockchain technology: Extending the technology–organization–environment (TOE) framework in the Australian context. *Sustainability, 13*(16), 9404.

Manser, E. H., Peltier, J., & Barger, V. A. (2021). Enhancing the value co-creation process: artificial intelligence and mobile banking service platforms. *Journal of Research in Interactive Marketing, 15*(1), 68-85.

Mohammed, M. A., & Okechukwu, N. E. (2025). Impact of artificial intelligence on customer service in the banking sector: A case study of deposit money banks (DMBs) in Abuja. *African Research Reports, 1*(6), 502-512.

Morgan, R. M., & Hunt, S. D. (1994). The commitment-trust theory of relationship marketing. *Journal of Marketing, 58*(3), 20-38. https://doi.org/10.1177/002224299405800302

Okeke, L. (2025). AI-powered chatbots and customer experience in Nigeria's banking sector: Opportunities and challenges. *Nnadiebube Journal of Social Sciences, 6*(1), 71-88.

Okoliko, E. O., Ayetigbo, A. O., Ifegwu, I. J., & Chidiebere, N. U. (2023). Artificial intelligence impact in revolutionizing the Nigerian banking industry: An assessment of selected deposit money banks in Abuja. *The Achievers Journal of Scientific Research, 5*(2), 120-131.

Oladipupo, S. I., & Oluwabunmi, D. (2026). Effect of AI-enabled service quality on banks' customer loyalty: Mediating role of customer satisfaction. *Journal of Economics and Allied Research, 11*(1), 312-326.

Olota, O. O., Akinkunmi, O. N., & Balogun, E. O. (2025). Artificial intelligence and customer satisfaction in the Nigerian banking sector. *University Economic Bulletin, 20*(2), 44-56.

Olumoyegun, P. M., Alabi, J. O., & Nurudeen, Y. Z. (2024). Artificial intelligence and customer satisfaction of selected deposit money banks in Lagos State, Nigeria. *Journal of Business Management, Innovation and Creativity, 3*(2), 178-189.

Omoge, A. P., Gala, P., & Horky, A. (2022). Disruptive technology and AI in the banking industry of an emerging market. *International Journal of Bank Marketing, 40*(6), 1217-1247.

Omoruyi, O. (2025, August 18). *Easy sign-ups, early exits: The tale of dormant fintech wallets in Nigeria*. Technext. https://technext24.com/2025/08/18/dormant-fintech-wallets-in-nigeria/

Oyeniyi, L. D., Ugochukwu, C. E., & Mhlongo, N. Z. (2024). Implementing AI in banking customer service: A review of current trends and future applications. *International Journal of Science and Research Archive, 11*(2), 1492-1509.

Oyetunji, D. J. (2024). The role of artificial intelligence and machine learning in enhancing customer experience in Nigeria digital banks. *International Journal of Advance Research, Ideas and Innovations in Technology, 10*(1), 377-382.

Rahman, M., Ming, T. H., Baigh, T. A., & Sarker, M. (2023). Adoption of artificial intelligence in banking services: an empirical analysis. *International Journal of Emerging Markets, 18*(10), 4270-4300.

Saha, A., & Jublee, D. I. (2025). Adoption intention in metaverse tourism platforms: An empirical investigation based on commitment-trust and social presence perspective. *Communications of the Association for Information Systems, 55*(1), 43-65.

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.

Singh, P., & Singh, V. (2024). The power of AI: enhancing customer loyalty through satisfaction and efficiency. *Cogent Business & Management, 11*(1), 2326107.

Udodiugwu, M. I., Eneremadu, K. E., Onunkwo, A. R., & Onyia, M. K. (2024). The role of artificial intelligence in enhancing the performance of banks in Nigeria. *Arabian Journal of Business and Management Review (Oman Chapter), 11*(2), 27-34.

Uzoamaka, C., & Ade, B. S. (2026). Predictive roles of customer-centric and risk management AI applications in optimizing banking operations in Nigeria. *Journal of Business, IT, and Social Science, 5*(1), 6-12. https://doi.org/10.51470/BITS.2026.05.01.06

Yamane, T. (1973). *Statistics: An introductory analysis (2nd Ed.)*. New York University.

Zhang, L. L., & Kim, H. (2020). The influence of financial service characteristics on use intention through customer satisfaction with mobile fintech. *Journal of System and Management Sciences, 10*(2), 82-94.

Zungu, N. P., Amegbe, H., Hanu, C., & Asamoah, E. S. (2025). AI-driven self-service for enhanced customer experience outcomes in the banking sector. *Cogent Business & Management, 12*(1), 2450295.