

Digital Banking Services and Customer Retention Among Deposit Money Banks in Nigeria

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Abstract

The spread of financial technology has completely redefined the service delivery architecture of deposit money banks (DMBs) in Nigeria, and has consequently redefined the way in which these banks engage and serve their customers. In the present study, the researchers analyze the impact of five different dimensions of digital banking namely: digital banking mobile banking, internet banking, ATM services, USSD banking and digital payment platforms on customer retention among DMBs in Nigeria. This study is based on the theoretical framework of the Technology Acceptance Model (TAM) and the Expectation-Confirmation Model (ECM) and uses cross sectional survey approach with 385 active bank customers in Lagos, Abuja and Kano. The data were analyzed by hierarchical multiple regression analysis using IBM SPSS 26 software and structural equation modelling (SEM) using IBM AMOS 26 software. The results indicate that mobile banking, internet banking and digital payment platforms all positively and significantly influence customer retention ($\beta = 0.312$, $p < 0.001$; $\beta = 0.241$, $p < 0.001$; $\beta = 0.198$, $p < 0.01$, respectively). However, ATM services ($\beta = 0.089$) and USSD banking ($\beta = 0.074$) have directionally positive but statistically insignificant coefficients. The overall model explains 61.4% of the variation in retention ($R^2 = 0.614$). Banks thus need to regard ATM uptime and USSD reliability as a floor for retention. Deposit money banks are encouraged to invest strategically in mobile app development, cyber security infrastructure and further digital payment services to maintain competitive retention benefits.

Keywords: Digital Banking, Mobile Banking, Customer Retention, Deposit Money Banks, Nigeria, Financial Technology.

Introduction

The financial services industry has undergone a significant transformation in the way it engages with its clients around the world, driven by the speed of digitisation in financial services delivery. Nigeria is a particularly interesting case study as the Central Bank of

Nigeria (CBN) reported that electronic payment transactions grew from 2.4 billion in 2018 to 9.3 billion in 2023, an increase of almost 4 times over a five-year span (Central Bank of Nigeria Statistical Bulletin, 2024). The trend is a result of the rising adoption of mobile banking apps, internet banking portals, USSD shortcode channels and fintech-powered digital payment platforms by the Nigerian banking public.

Digital transformation is an opportunity and a necessity for deposit money banks. In general, customer retention is defined as a bank's ability to maintain customer relationships for the long term, and it is generally acknowledged that it is a key factor in a bank's long-term profitability and competitive position (Lovelock & Wirtz, 2019). The research of customer relationships over the years has consistently shown that it is far more expensive to acquire a new customer than to keep an existing one and loyal customers are more likely to cross-sell additional products and services and to refer customers to the business (Austin et al., 2025).

While there is a natural relationship between the quality of digital banking and customer retention, there is a dearth of systematic empirical studies on the relationship and a methodological disconnection of the studies undertaken in Nigeria. The current literature has focused on technology adoption intention or customer satisfaction as intervening variables, with the direct impact of the disaggregated dimensions of digital service on retention being under-researched (Owusu Kwateng et al., 2018; Olowofela et al., 2025). Moreover, much of the existing evidence is pre-COVID-19, a time when a significant shift in customer expectations of digital financial services was already taking place.

The current study addresses these shortcomings by examining the impact of five operationally different dimensions of digital banking (mobile banking, internet banking, ATM services, USSD banking, and digital payment platforms) on the retention of customers of DMBs in Nigeria during the period 2020 to 2024. This study uses a quantitative, survey methodology with multiple regression analysis and structural equation modeling of 385 bank customers from three geographically representative cities. The two unique features of its contribution are: First, the digital banking is broken down into distinct channels of operations instead of being viewed as a unidimensional construct; Second, the analysis is conducted within the context of the Nigerian banking sector after the pandemic era, thus providing more contemporary evidence for managerial and regulatory stakeholders.

Literature Review

Conceptual Review

Digital Banking Services

Digital banking refers to the electronic delivery of traditional banking products and services that allow customers to interact with their banking institutions without having to go to a physical branch (Pikkarainen et al., 2004; Luo et al., 2010). For the purpose of this study, digital banking is defined as the provision of banking services via electronic means including mobile apps, internet portals, ATM terminals, USSD shortcodes and electronic payment

gateways as outlined by CBN (2021). To encompass the full range of this construct, a five-dimensional operationalisation is used.

Mobile banking includes banking transactions that are carried out using dedicated applications provided by banks or mobile-friendly web pages (Raza et al., 2020). Nigeria's mobile banking base is growing quickly, with more than 220 million SIM subscriptions and nearly 40% smartphone penetration (GSMA, 2022). Internet banking is defined as conducting banking transactions via secure web-based interfaces and is significant for corporate clients who need to have full banking operations functionalities (Garba et al., 2019). ATM services are still very important, especially in cash dominated transactions in peri-urban areas, as they enable cash withdrawal, fund transfer and bill payment using physical automated teller machine (ATM) (Taiwo & Agwu, 2017; Mohammed et al., 2025). USSD banking allows banking transactions to be conducted on mobile shortcode channels (such as 737#, 901#) without an Internet connection, thereby providing banking services to feature phone users and populations in areas with low coverage (Jibril & Otsupius, 2024). Finally, digital payment platforms are not only fintech-based payment solutions but also bank-based payment solutions such as NIP/NIBSS interbank transfers, QR code payments, POS terminal networks, and buy-now-pay-later integrations, which are capable of expanding transactional capacity beyond the conventional banking interface (Enhancing Financial Innovation & Access EFINA, 2023).

Customer Retention

In terms of operations, customer retention refers to the likelihood that a customer will remain a customer of a particular bank, will not switch to other banks, will become more involved with the bank's products and services, and will actively recommend the bank to other people (Oliver, 2010; Austin et al., 2025). It's a multi-faceted measure that combines aspects of behavioural loyalty, attitudinal commitment and customer advocacy. Retention is generally measured in practice by banking institutions using metrics like account tenure, product holdings per customer, Net Promoter Score, and churn rate (Owusu et al., 2020).

Theoretical Review

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) proposed by Davis (1989) suggests that the acceptance of a particular technology is largely dependent on the perceived usefulness and ease of use of the technology. Later models, such as TAM2 (Venkatesh & Davis, 2000) and the Unified Theory of Acceptance and Use of Technology (UTAUT), added social influence and facilitating conditions to the original model. TAM is relevant to the current study because customers' usage of digital banking channels, such as mobile apps, USSD platforms, or payment gateways, is significantly influenced by their perceived practicality and ease of use of these tools (Raza et al., 2020; Luo et al., 2010).

Expectation-Confirmation Model (ECM)

Bhattacharjee (2001) extended the expectation-disconfirmation theory to the IS field and suggested that continued technology use depends on users' satisfaction with their previous experiences and the extent to which their experiences meet their expectations for the technology's performance. The ECM is especially relevant in the post adoption stage of digital banking because customer retention is largely determined by whether cumulative digital banking experience meets initial expectations related to convenience, transaction speed, and system security (Alalwan et al., 2017; Luo et al., 2010).

Service Quality Theory (SERVQUAL)

Parasuraman, Zeithaml and Berry (1988) define service quality as the discrepancy between customer expectations and their perceptions of service delivery on five dimensions: reliability, assurance, tangibles, empathy and responsiveness. In the digital banking setting, these dimensions become system availability, data security measures, interface design quality, personalised digital support, and transaction processing speed (Garba et al., 2019; Owusu et al., 2020). The constructs of service quality, customer satisfaction, security and trust used in the analytical model of the study are based on the theoretical framework of SERVQUAL.

The integrated use of TAM, ECM, and SERVQUAL provides a holistic explanation of customer retention in digital banking. TAM provides a basis for initial adoption decisions, ECM provides a basis for continuance intentions, and SERVQUAL provides a basis for understanding how the dimensions of service quality led to satisfaction, trust, and continued loyalty. These three frameworks are therefore well positioned to analyze the effect of different dimensions of Digital Banking Services on the retention behavior of DMB customers in Nigeria.

Empirical Review

Alalwan et al. (2017) conducted a thorough review of the literature on mobile banking adoption, which revealed that perceived usefulness, ease of use, trust and service quality are the most consistently identified factors affecting continued mobile banking usage in developing countries, with trust as a particularly important factor in markets where digital payment systems are still in their infancy, as is the case in Nigeria. More recently, Ndubueze, (2023) confirmed these findings in a developing country context, demonstrating that trust and perceived ease of use remain critical determinants of mobile banking continuance in the post-pandemic era. Raza et al. (2020) used SEM on a sample of 350 bank customers in Pakistan and the findings indicated that efficiency, system availability, privacy, and responsiveness accounted for 58% of the variance in customer loyalty, with privacy and security being the strongest individual predictors. The findings are cross-contextual because the situation in Pakistan is similar to that of Nigeria, a large emerging market with a significant unbanked population and a rapidly growing mobile money sector.

Luo et al. (2010) expanded the ECM framework to include perceived security, social influence and personalisation to study the continued intention to use mobile banking in China. Building on this foundation, Vaddhano, (2023) found that perceived security and trust continue to be significant predictors of mobile banking continuance intention, with the relationship strengthening in environments with high cybercrime prevalence. They found that satisfaction and expectation confirmation are key determinants of continuance, and that perceived security has a direct impact on the link between satisfaction and continuance. Their results confirmed that satisfaction and expectation confirmation are central to continuance decisions, and further demonstrated that perceived security significantly moderates the relationship between satisfaction and continuance a finding with direct implications for Nigerian DMBs, where cybersecurity trust is increasingly recognised as a prerequisite for sustaining digital channel engagement. Owusu Kwateng et al. (2018) conducted a study on 385 bank customers in Ghana and concluded that navigational ease, transaction speed, information quality and security are all significant antecedents of internet banking satisfaction, which positively relates to customer loyalty. A more recent study by Arora & Banerji, (2024) in the West African banking context reinforced these findings, confirming that service quality dimensions remain strong predictors of customer loyalty in the post-COVID digital banking landscape. The findings are also generalisable due to the similarities in the structure of the banking sectors of Ghana and Nigeria.

In Nigeria, Olowofela et al. (2025) showed that the availability of ATM, the usability of mobile banking and the responsiveness of internet banking all have a direct effect on customer satisfaction, and direct effects on customer retention have not been explored enough and need further investigation. In a mixed methods study of 300 USSD banking users in Lagos and Kano, Jibril and Otsupius (2024) observed that USSD services are a key factor in curbing voluntary exit from formal banking channels among low-income customers, highlighting USSD's strategic relevance as a retention tool for financially underserved segments. The study by Garba et al. (2019) on internet banking in Delta State, Nigeria, revealed that the most significant factors influencing internet banking loyalty are system reliability ($\beta = 0.38$) and transaction security ($\beta = 0.31$), which further confirms the importance of trust in the relationship between internet banking and loyalty. Extending this line of inquiry, Akingbade et al. (2024) reported similar findings in the Nigerian context, demonstrating that system reliability and security remain critical determinants of internet banking loyalty, with the effect being more pronounced in the post-pandemic period.

Owusu et al. (2020) conducted a study on the mobile banking service quality and its impact on customer retention among bank customers in Ghana and discovered that service quality of mobile banking significantly predicts customer retention ($\beta = 0.42$, $p < 0.01$) with satisfaction being a partial mediator and that the effect is greater among younger and better educated customers. Omoje et al. (2022) investigated 420 bank customers in Lagos State and concluded that digital payment service, mobile banking, and USSD are all

important predictors of loyalty while ATM usage was not statistically significant. Sulaiman et al. (2021) employed PLS-SEM on 360 customers of three banks (First Bank, Zenith Bank and Access Bank) to determine that satisfaction completely mediates the digital banking quality-loyalty relationship for the internet banking users while it partially mediates for the mobile banking users, which is explained by switching costs and habitual usage behaviour in the generation of a partial direct effect on mobile banking.

These findings are placed in a context of international evidence. In India, Shankar and Jebarajakirthy (2019) discovered that the quality dimensions of mobile banking security, responsiveness, and personalisation are important factors that influence customer loyalty, with the relationship being stronger within digital-native segments. In the context of Saudi Arabia, Sharma (2025) found that the link between convenience of digital banking and loyalty is significantly moderated by high perceived cybersecurity risk, which aligns significantly with Nigeria, where NFIU data shows that digital banking fraud cases increased by 187% from 2019 to 2022. According to EFINA (2023), service failures, which include failed transactions, system downtime, and delayed reversals, are the most common cause of dissatisfaction with digital banking among formal account holders in Nigeria, directly linking service failure to digital banking attrition.

Identified Research Gaps

Despite the growing number of studies on digital banking and customer retention, there are three important gaps in the literature. First, most of the existing literature considers digital banking as a simple composite construct or focuses on a single or two delivery channels, which makes it hard to see the differential effect on retention of different digital modalities. Second, empirical evidence on the period following the COVID era (2020–2024) is limited, as adoption rates picked up significantly and customer expectations changed dramatically during that time. Third, only a few studies have used a combined multiple regression and SEM approach, which restricts the ability to identify direct and mediated relationships between the dimensions of digital banking and retention results. The present study aims to address all three of these gaps simultaneously.

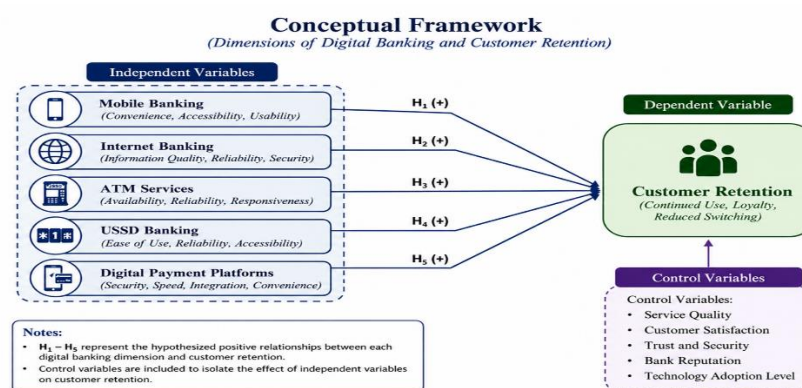


Figure 1: Conceptual Framework — Digital Banking Services and Customer Retention

Hypotheses Development

Based on the reviewed literature and theoretical frameworks, the following hypotheses are proposed:

H₁: Mobile banking exerts a significant positive influence on customer retention.

H₂: Internet banking exerts a significant positive influence on customer retention.

H₃: ATM services exert a significant positive influence on customer retention.

H₄: USSD banking exerts a significant positive influence on customer retention.

H₅: Digital payment platforms exert a significant positive influence on customer retention.

Literature Summary

Table 1: Summary of Key Empirical Studies

Author(s)	Year	Country	Method	Principal Findings
Alalwan et al.	2017	Multi-country	Systematic Review	Perceived usefulness, trust, and ease of use are the foremost drivers of continued mobile banking adoption
Raza et al.	2020	Pakistan	SEM	E-banking service quality dimensions collectively account for 58% of customer loyalty variance
Luo et al.	2010	China	ECM-SEM	User satisfaction and perceived security are the principal determinants of continued mobile banking intention
Owusu Kwateng et al.	2018	Ghana	PLS-SEM	Internet banking quality dimensions significantly enhance customer loyalty among educated bank customers
Owusu et al.	2020	Ghana	Survey/SEM	Mobile banking service quality is a robust predictor of customer retention, partly mediated by satisfaction
Jibril & Otsupius	2024	Nigeria	Mixed-Methods	USSD banking substantially reduces voluntary exit from formal banking among low-income customer segments
Omoge et al.	2022	Nigeria	Survey/Regression	Fintech-enabled digital services are significant determinants of customer loyalty in Lagos State
Sulaiman et al.	2021	Nigeria	PLS-SEM	Customer satisfaction fully mediates the internet banking quality-loyalty relationship and partially mediates the mobile banking equivalent
EFInA	2023	Nigeria	National Survey	Transaction failures and system outages constitute the primary source of dissatisfaction with digital banking
Central Bank of Nigeria	2024	Nigeria	Industry Report	Electronic payment transactions surpassed 9.3 billion in 2023, reflecting near-fourfold growth over five years

Methodology

Research Design

The study's purpose of measuring associations between specific digital banking dimensions and customer retention at a particular time was achieved using a quantitative cross sectional survey design, as this design is appropriate for studies that focus on measuring associations at a specific time point (Creswell & Creswell, 2018). The cross-sectional approach is similar to other digital banking retention studies in developing country settings (Raza et al., 2020; Owusu et al., 2020; Omoge et al., 2022).

Population and Sampling

The target population was the adult customers of the DMBs who actively used at least one digital banking channel in the last six months before the data collection. The three cities (Lagos, Abuja and Kano) were purposefully selected to give geographic representation of the commercial, administrative and northern economic centres of Nigeria. The minimum sample size was calculated based on Krejcie and Morgan's (1970) formula. A stratified random sampling was used, stratified by city, gender and primary bank affiliation. A total of 420 questionnaires were sent out and after data cleaning, 385 were returned, representing a response rate of 91.7%.

Measurement Instrument

The items for the mobile banking, internet banking, ATM service quality, USSD banking, digital payment platform and customer retention were adapted from the validated existing instruments of Raza et al. (2020), Owusu Kwateng et al. (2018), Taiwo and Agwu (2017), Jibril and Otsupius (2024), EFINA (2023) and Omoge et al. (2022), respectively. Content validity was determined by panel review by five academic experts and two experienced bank managers. The instrument's reliability was assessed in a pilot study with 40 respondents, yielding Cronbach's alpha values ranging between 0.78 and 0.89, which are all above the acceptable level of 0.70 (Nunnally, 1978).

Variable Specification

Customer Retention (CRT) was operationalised as a five-item composite scale comprising of continued patronage intention, resistance to switching, service depth, recommendation behaviour and overall loyalty.

The five independent variables are: Mobile Banking (MBK) measured by six items that capture application functionality, ease of use, and reliability; Internet Banking (IBK) measured by five items that capture portal usability, transaction security, and information quality; ATM Services (ATM) measured by four items that capture machine availability, cash replenishment, and transaction success rates; USSD Banking (USB) measured by four items that capture service accessibility, ease of use, and network reliability; and Digital Payment Platforms (DPP) measured by five items that capture payment speed, interoperability, and merchant acceptance coverage. Control variables are Service Quality (SRQ), Customer

Satisfaction (CSS), Trust and Security (TRS), Bank Reputation (BRP), and Technology Adoption Level (TAL).

Model Specification

The multiple regression model takes the following form:

$$CRT_i = \beta_0 + \beta_1 MBK_i + \beta_2 IBK_i + \beta_3 ATM_i + \beta_4 USB_i + \beta_5 DPP_i + \beta_6 SRQ_i + \beta_7 CSS_i + \beta_8 TRS_i + \beta_9 BRP_i + \beta_{10} TAL_i + \epsilon_i$$

Descriptive statistics, Pearson's correlation and hierarchical multiple regression were done in IBM SPSS 26. Analysis for structural equation modelling was done in IBM Amos 26. Tests of multicollinearity were done using Variance Inflation Factor (VIF) measures while heteroscedasticity was tested using Breusch Pagan test. Normality of residuals was determined using skewness, kurtosis and Shapiro-Wilk test. Before running the SEM models, confirmatory factor analysis was performed.

Results

Descriptive Statistics

Table 2 describes the statistical measures for all study constructs. The mean CRT value was 3.62 (SD = 0.84), indicating fairly high values amongst the survey sample. Of the electronic banking construct measures, MBK had the highest mean value (M = 3.81, SD = 0.79), indicating that users perceive their experience favourably. The ATM and USSD bank service scores were considerably lower at M = 3.41 (SD = 0.97) and M = 3.29 (SD = 1.01), respectively.

Table 2: Descriptive Statistics of Study Variables

Variable	N	Mean	Median	Std. Dev.	Min	Max	Skewness	Kurtosis
CRT	385	3.621	3.800	0.841	1.000	5.000	-0.412	2.891
MBK	385	3.814	4.000	0.791	1.000	5.000	-0.521	3.124
IBK	385	3.582	3.600	0.913	1.000	5.000	-0.344	2.764
ATM	385	3.413	3.400	0.971	1.000	5.000	-0.218	2.521
USB	385	3.291	3.200	1.012	1.000	5.000	-0.104	2.311
DPP	385	3.738	3.800	0.829	1.000	5.000	-0.489	3.012
SRQ	385	3.544	3.600	0.876	1.000	5.000	-0.311	2.693
CSS	385	3.601	3.800	0.854	1.000	5.000	-0.402	2.887
TRS	385	3.412	3.400	0.988	1.000	5.000	-0.211	2.499

Note: CRT = Customer Retention; MBK = Mobile Banking; IBK = Internet Banking; ATM = ATM Services; USB = USSD Banking; DPP = Digital Payment Platforms; SRQ = Service Quality; CSS = Customer Satisfaction; TRS = Trust and Security.

Reliability and Validity

The reliability statistics and results from CFA test on all constructs are shown in Table 3. All Cronbach's alphas are higher than the 0.70 criteria, all AVE scores are greater than the 0.50 criteria, and all composite reliability (CR) ranges between 0.81 and 0.91.

Table 3: Reliability and Validity Statistics

Construct	Items	Cronbach's α	AVE	CR
Customer Retention (CRT)	5	0.886	0.612	0.891
Mobile Banking (MBK)	6	0.879	0.598	0.884
Internet Banking (IBK)	5	0.851	0.571	0.858
ATM Services (ATM)	4	0.782	0.531	0.818
USSD Banking (USB)	4	0.776	0.524	0.812
Digital Payment Platforms (DPP)	5	0.861	0.584	0.867
Service Quality (SRQ)	5	0.843	0.562	0.849
Customer Satisfaction (CSS)	4	0.832	0.551	0.839
Trust & Security (TRS)	4	0.814	0.536	0.821

Note: AVE = Average Variance Extracted; CR = Composite Reliability.

Correlation Analysis

The Pearson correlation matrix in Table 4 shows that there are positive bivariate relationships between all five dimensions of digital banking and customer retention. Mobile banking ($r = 0.511$, $p < 0.01$) and digital payment platforms ($r = 0.487$, $p < 0.01$) are the most highly correlated with retention, followed by internet banking ($r = 0.432$, $p < 0.01$). Weaker, but statistically significant associations are found for ATM services ($r = 0.274$, $p < 0.01$) and USSD banking ($r = 0.241$, $p < 0.01$). Inter-predictor correlations are less than 0.65 and VIFs range from 1.543 to 2.543, which means that multicollinearity is not a significant problem for model estimates.

Table 4: Pearson Correlation Matrix

Variable	CRT	MBK	IBK	ATM	USB	DPP	SRQ	CSS	TRS
CRT	1.000								
MBK	0.511* *	1.000							
IBK	0.432* *	0.524* *	1.000						
ATM	0.274* *	0.312* *	0.398* *	1.000					
USB	0.241* *	0.287* *	0.341* *	0.491* *	1.000				
DPP	0.487* *	0.621* *	0.547* *	0.298* *	0.312* *	1.000			

Variable	CRT	MBK	IBK	ATM	USB	DPP	SRQ	CSS	TRS
SRQ	0.448*	0.501*	0.487*	0.384*	0.341*	0.512*	1.000		
CSS	0.521*	0.498*	0.463*	0.317*	0.289*	0.541*	0.612*	1.000	
TRS	0.412*	0.463*	0.421*	0.341*	0.398*	0.487*	0.524*	0.543*	1.000

Note: ** Correlation significant at the 0.01 level (2-tailed).

Multiple Regression Analysis

Table 5 shows the results of a two-stage hierarchical regression. Model 1 contains just the five digital banking predictors while Model 2 contains the digital banking predictors and control variables. Interpretation emphasizes Model 2 as the completely specified baseline specification.

Table 5: Multiple Regression Results (Dependent Variable: Customer Retention)

Variable	Model 1 (β)	p-value	Model 2 (β)	p-value	VIF
Mobile Banking (MBK)	0.328	0.000***	0.312	0.000***	2.341
Internet Banking (IBK)	0.261	0.000***	0.241	0.000***	2.187
ATM Services (ATM)	0.102	0.092	0.089	0.121	1.721
USSD Banking (USB)	0.085	0.118	0.074	0.159	1.684
Digital Payment Platforms (DPP)	0.214	0.001**	0.198	0.003**	2.543
Service Quality (SRQ)	—	—	0.118	0.021*	2.341
Customer Satisfaction (CSS)	—	—	0.142	0.008**	2.512
Trust & Security (TRS)	—	—	0.127	0.014*	2.214
Bank Reputation (BRP)	—	—	0.088	0.097	1.892
Technology Adoption Level (TAL)	—	—	0.071	0.183	1.543
Constant	0.412	0.000***	0.287	0.001**	—
R ²	0.538		0.614		
Adjusted R ²	0.531		0.602		
F-statistic	87.42	0.000***	59.38	0.000***	
Durbin-Watson	1.74		1.81		

Note: *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$. Standardised beta coefficients are reported throughout.

Hypotheses Testing

Table 6: Summary of Hypotheses Testing Outcomes

Hypothesis	Statement	β	p-value	Decision
H ₁	Mobile banking exerts a significant positive influence on customer retention	0.312	0.000	Supported
H ₂	Internet banking exerts a significant positive influence on customer retention	0.241	0.000	Supported
H ₃	ATM services exert a significant positive influence on customer retention	0.089	0.121	Not Supported
H ₄	USSD banking exerts a significant positive influence on customer retention	0.074	0.159	Not Supported
H ₅	Digital payment platforms exert a significant positive influence on customer retention	0.198	0.003	Supported

SEM Model Fit Indices

Table 7: Structural Equation Model Fit Statistics

Fit Index	Recommended Threshold	Obtained Value	Assessment
Chi-square/df (CMIN/df)	≤ 3.00	2.34	Acceptable
RMSEA	≤ 0.08	0.059	Good Fit
CFI	≥ 0.90	0.934	Good Fit
TLI	≥ 0.90	0.921	Good Fit
SRMR	≤ 0.08	0.061	Good Fit
GFI	≥ 0.90	0.912	Good Fit

Robustness Tests

Table 8: Results of Diagnostic and Robustness Tests

Diagnostic Test	Statistic	p-value	Outcome
Breusch-Pagan (Heteroskedasticity)	14.23	0.162	No significant heteroskedasticity detected
Durbin-Watson (Autocorrelation)	1.81	—	No significant autocorrelation detected
Variance Inflation Factor (Max VIF)	2.543	—	Multicollinearity within acceptable limits
Harman Single-Factor Test	28.4% variance	—	Common method variance not a concern
Shapiro-Wilk (Normality of Residuals)	0.981	0.214	Residuals conform to normality assumptions

Discussion

The regression and SEM results together provide a theoretically coherent explanation of the effect of digital banking services on customer retention outcomes among Nigerian DMBs from 2020 to 2024.

Mobile banking as the key to retaining customers. Mobile banking was the most influential determinant of retention with the highest standardised coefficient in the full model ($\beta = 0.312$, $p < 0.001$), which was consistent with the predictions of both the TAM and ECM. Nigerian customers who consider the mobile application of their bank as useful, allowing them to manage their accounts, transfer funds, pay bills, and access loans, and operationally convenient are likely to engage in the bank's mobile application habitually (Davis, 1989; Shankar & Jebarajakirthy, 2019). The ECM dimension of the result is a result of the cumulative reinforcement effect – when the customers' experience with mobile banking over time confirms their initial expectations of speed, convenience, and reliability, they have stronger intentions to continue using it (Bhattacharjee, 2001; Luo et al., 2010). This result is generally consistent with that of Owusu et al. (2020) who found a similar mobile banking quality-retention coefficient of 0.42 in Ghana and Omoge et al. (2022) who found mobile banking as the highest mobile banking retention predictor in Lagos State.

The implication of this discovery on the Nigerian DMBs is huge. The intuitive design and high reliability of a mobile app diminish the friction in transactions, encourage repeat usage and create switching costs by building up a history of personalised transactions and embedded payment features. Mobile has become the key customer-bank interaction channel during the post-COVID pandemic and should be viewed as strategic assets, not support tools. The risk of disengagement and increased customer attrition only grows with banks' failure to invest in mobile banking infrastructure.

Secondary retention enablers: Internet banking, digital payment platforms. The results indicated that both Internet banking ($\beta = 0.241$, $p < 0.001$) and digital payment platforms ($\beta = 0.198$, $p < 0.01$) had significant positive impacts on retention, underscoring the multi-channel nature of modern banking interactions. Among corporate and SME customers who need advanced features like bulk payments, trade finance management, and real-time account reporting, the impact of retention is especially pronounced, as also found by Owusu Kwateng et al. (2018) who noted the same for more educated and higher income banking customers in Ghana.

The fact that digital payment platforms are the third ranked retention predictor shows the new platform dynamics of Nigeria's fintech ecosystem. Customers who are integrated into a bank's own payment system, either via inter-bank instant transfers, QR code payments, or merchant arrangements at the point of sale, will have higher switching costs as they will need to re-establish payment connections with merchants, employers, and personal contacts if they switch to a different bank. This network embeddedness creates a level of structural retention, which works partly independently of the quality of individual transactions (Omoge et al., 2022; EFInA, 2023). The strategic implication is obvious:

competitive retention advantage will grow increasingly to institutions that reach dominant payment platform status, not just dominant account-holding status.

The insignificant retention impact of ATM services and USSD banking. The results for the full model showed that ATM services ($\beta = 0.089$, $p > 0.05$) and USSD banking ($\beta = 0.074$, $p > 0.05$) were not statistically significant and thus should be interpreted with care. The two channels are important access points as ATMs continue to be the main source of cash withdrawal for a significant portion of the Nigerian banking population while USSD banking is the key access point for the unbanked and underbanked segment. The non-significance of their retention effects most likely can be attributed to the fact that these channels are relatively standardised across DMBs – their satisfactory performance is expected, and their failure causes dissatisfaction and switching behavior (Raza et al., 2020; Jibril & Otsupius, 2024). ATM and USSD banking are like hygiene factors in the analogy of Herzberg's two-factor theory (a supplementary interpretive lens not part of the core TAM/ECM/SERVQUAL framework) in service situations; they will not make a customer happy but they will keep him from being unhappy. Banks need to thus regard the ATM uptime and USSD reliability as a floor for retention, and differentiation as mobile banking excellence and digital payment ecosystem development.

The contribution of control variables. Customer satisfaction ($\beta = 0.142$, $p < 0.01$), trust and security ($\beta = 0.127$, $p < 0.05$), and service quality ($\beta = 0.118$, $p < 0.05$) were all found to be significant as predictors of retention, thus confirming the theoretical relevance of the ECM and SERVQUAL frameworks in explaining retention beyond the direct effect of individual digital channels. The trust and security finding is especially relevant in the context of Nigeria's reported rise in digital banking fraud, with NFIU data showing a 187% increase in fraud incidents from 2019 to 2022, and is consistent with the findings of Sharma (2025), which reveal that higher perceived cybersecurity risk significantly weakens the positive correlation between digital banking convenience and customer loyalty. Nigerian DMBs are thus required to view investment in cybersecurity as a retention strategy, and not just a compliance requirement.

Conclusion and Recommendations

Conclusion

This study examined the effect of five digital banking dimensions namely mobile banking, internet banking, ATM services, USSD banking and digital payment platforms on customer retention of Nigerian DMBs using survey responses from 385 respondents in Lagos, Abuja and Kano in the period 2020-2024. All three factors (mobile banking, internet banking, and digital payment platforms) had a statistically significant positive impact on retention, with mobile banking having the highest coefficient. ATM services and USSD banking were directionally positive but not statistically significant, indicating that these services are more likely to be service continuity variables than loyalty drivers. The full model accounted for 61.4% of the variance in customer retention, which suggests that digital banking services have a significant explanatory power for customer retention. The overall finding is that, in

today's evolving banking landscape in Nigeria, customer retention is directly related to the quality of the mobile app and its ability to integrate into digital payment platforms.

Recommendations

Based on the findings of the study, the following recommendations are advanced:

1. Focus on mobile app development as a key retention tool. With the proven impact on retention, Nigerian DMBs should view mobile app improvement which includes user experience enhancement, biometric authentication, additional functionality and transaction reliability as a strategic priority and not just a routine IT maintenance task.
2. Develop digital payment systems to create switching costs. Banks need to actively expand merchant acceptance networks, peer-to-peer payment methods and cross-platform interoperability, which will lock their customers into their own payment ecosystems and make it more expensive to change payment channels.
3. Keep ATM and USSD service levels as a defensive retention floor. These channels currently aren't used as a loyalty differentiator, but their failure is a known driver of customer attrition. As a minimum competitive requirement, high uptime and reliability should be achieved for both channels.
4. Make cyber security an investment, not just a compliance requirement. Trust and security were one of the key factors that came up as a retention predictor, and with the documented rise of digital fraud in Nigeria, banks need to adopt real-time fraud detection systems, be transparent about their security certifications and promptly deal with fraud incidents to preserve the trust capital that will help them to sustain digital retention.
5. Create digital retention programmes for segments. The differential effect of digital channels on customer segments requires differentiated approaches: investment in mobile banking should focus on retail segments, investment in internet banking should focus on corporate and SME customers, and continuity of the USSD service should be a priority for low-income and financially excluded customers.
6. Include digital service quality and customer retention metrics in regulation oversight. The CBN is urged to incorporate digital banking quality and customer retention outcomes in its supervisory assessment instruments in addition to the traditional prudential parameters like capital adequacy and asset quality measures.

Limitations and Future Research

There are a number of limitations to the current study that need to be recognized. First, the cross-sectional design does not allow for causal conclusions to be drawn about the direction of the digital banking-retention relationship; future studies are suggested to be longitudinal or panel studies. Second, the sample is limited to three urban centres, which may limit the generalisability of the results to rural areas where the relative retention value of ATM

services and USSD banking may be higher. Future research needs to be expanded geographically to secondary cities and rural customers. Third, the study fails to consider bank-level moderating factors which may affect the digital banking-retention relationship, such as asset size, digital banking investment intensity, and corporate governance quality. Adding bank-level interaction effects would add to the detail of the managerial insights that can be gained from this line of inquiry.

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