

Financial Innovation and Performance of Deposit Money Banks in Nigeria

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Abstract

The intrinsic ability of deposit money banks to innovate has resulted in a threat to their performance and existence. Because failure to innovate will dampen patronage from depositors and investors, which in the long run will affect the internal profitability of the deposit money banks. This study investigated the effect of financial innovation and the performance of deposit money banks in Nigeria. The study employed time series data from 2012 to 2022 but was converted to quarterly data to accommodate the ordinary least squares condition, which gave forty-four-unit points before employing Auto-regressive distributed Lag Length (ARDL) to determine the short-run and long-run relationship between the outcome variable and explanatory variables. The findings were captured in the short run, based on the direction of the bound test that Automated teller machine and Mobile money payment had a positive significant effect on Loan-to-deposit ratio, whereas National Electronic Fund transfer and Point of Sale had a negative significant effect on Loan-to-deposit ratio. Based on the findings, it was recommended that deposit money banks should prioritise investment and promote Automated Teller Machines (ATM) and Mobile Money Payment platforms, as they positively and significantly impact the Loan-to-Deposit Ratio (LDR). These channels should be further developed to enhance their role in deposit mobilisation and loan expansion. Financial institutions should explore ways to make these platforms more efficient and supportive of the loan growth and liquidity management of the deposit money banks in Nigeria.

Keywords: Performance, financial innovation, automated teller machines, mobile money payment, national electronic fund transfer and point of sale.

1.0 Introduction

The banking sector plays a cogent role in the continuity and profitability of all types of businesses in the economy. Apart from being important to the firms, they also aid in the increase in investment of the economy, via their money creation mechanism (Chhaidar et al., 2023; Azimona, 2021). The deposit money banks also facilitate the attainment of sustainable economic growth and efficient

payment innovation through their innovative dexterity in the way depositors and investors invest more funds (Adiga & Haruna, 2024; Dangol, 2021). Deposit Money banks have been able to embrace the strategic notion of “Financial Innovation” but still sustain their traditional functions. The innovation is embraced to ensure service delivery of financial services is accurate and seamless to meet the customer’s technological taste and reduce the competitive threat of not embracing the visible innovation in the sector (Cheng, 2017). Financial innovation could take the form of institutional, product and process. Process innovation embraced by the deposit money banks entails the infusion of charges in the operation of credit and debit of funds, aided by technology such as Automated Teller Machine, Point of Sales, online banking, etc. (Ahmed and Wamugo, 2018; Okeke & Ezeala, 2023).

Inclusively, deposit money banks are operating within the financial system to improve profitability, maintain liquidity and ensure their intermediation process helps to increase performance of tier loans and advances (Evian et al., 2021; Effiom & Edet, 2022) and the loan-to-deposit ratio. In the same vein, financial innovation keeps the banks in a safer position to conduct their mortar and brick financial transactions between the surplus and deficit sectors of the economy (Nwakoby et al., 2020; Gambo, 2020). From a macro perspective, the financial innovation and monetary procedures move along the same direction, so the Central Bank of Nigeria has various targets, tools and procedures to tame and unleash innovation to improve the financial system (Ibe & Obialor, 2022; Chukwunulu, 2019). Financial Innovation should be embraced by banks and other financial institutions through a feasible analysis of the cost and risk involved, so as not to jeopardise the holistic construct of bank performance (Olalere et al., 2021; El-Chaaroni & Abiad, 2018).

Performance is the internal awareness of the entity to effectively and efficiently utilise its resources to improve its competitive advantage (Nekesa & Olweny, 2018). It is a multi-dimensional construct that has the perspective of financial and non-financial performance. Non-financial performance implies customer satisfaction, product excellence, and service excellence, while financial performance focuses on revenue, profit and cost (Oppusung et al., 2024; Putre et al., 2024). The financial performance of deposit money banks lies within the banks' loans and advances and quality of loan portfolio that would sustain their liquidity and continuously allow it to perform their intermediation in the economy (Okeke & Ezeala, 2023; Tahir et al., 2018).

The intrinsic ability of deposit money banks to innovate has resulted in a threat to their performance and existence. Because failure to innovate will dampen patronage from depositors and investors, which in the long run will affect internal profitability activities of the deposit money banks (Stoica et al., 2015; Ajide, 2016). Also, the international financial environment poses a threat to innovation to local financial institutions despite the alluring cost implication that may sap into the performance of the institution. But innovation in the deposit money bank, when monitored accurately, will allow large amounts of money to be liquid within the financial system of the sector. Despite the deposit money banks embracing financial innovation in terms of Automated teller machine, Point of Sale, Web-pay, etc, the impact of this innovation has not been felt fully in the banking sector. This could be due to the lack of understanding of the drivers of innovation and the wide gap in financial inclusion in a country like Nigeria. Globally, the financial crises have also caused asset portfolio deterioration, distortion in credit management, a fast-changing competitive atmosphere, economic changes, globalisation, and regulation, among others, which have affected the financial innovation prospects of global financial institutions and deposit money banks in Nigeria.

Studies such as Kipchoge & Mutuku (2024), Oppusung et al. (2024), Scot et al. (2017) and Siasulingana & Haabazoka (2024) picked some of the process innovations employed by deposit banks, e.g., Mobile money, Internet banking, Point of sales on bank performance, like the works, while some studies like Dangol (2021), Olalere et al (2021), Okeke & Ezeala (2023) and Adiga & Haruna (2024) captured the holistic concept of financial innovation on various aspects of financial performance. But still in the Nigerian context, the current financial innovation channels and technique employed by the deposit money banks have not been captured in full by current studies in form of ATM (Automated teller machine), POS (Point of Sales), WEB (Internet banking), MMO (Mobile Money payment), NEFT (National Electronic Fund transfer) and NIP (NIBSS instant payment), except for the empirical work of Olalere et al. (2021) that also captured the process innovation strategies employed in the banking sector in Nigeria. This study only captured the profitability component of bank financial performance.

Okeke & Ezeala (2023) revealed that deposit money banks' financial performance entails the internal ability of the banks to meet their intermediation responsibility. Okeke & Ezeala (2023) showed that financial performance measures of deposit money banks are captured under return on equity, liquidity ratio, asset management ratio, leverage ratio, profitability ratio, loan-to-deposit ratio and market ratio. Due to the over-emphasising of return on equity and return on assets as a financial performance in the works of Olalere et al. (2021), Ibe & Obialor (2022), Effiom & Edet (2022), and others reviewed, this study intends to measure performance from the perspective of the loan-to-deposit ratio. This measure aids in knowing the determinants of intermediation proficiency of the deposit money banks in Nigeria. In the quest to make the work robust, due to the unavailability of data for the phenomenon in the research title. The study would employ quarterly data from the period of 2012 to 2022, to agree with thirty one year's sample period on ordinary least squares, also to capture new financial innovations employed from 2012. The quarterly data would allow the deployment of short-run and long-run econometric modelling. This empirical work would also help to examine the premises of the theory of diffusion innovation using the various financial innovations adopted in the inquiry. Based on the premises above, this study examines the effect of financial innovation on the performance of deposit money banks in Nigeria.

2.0 Literature Review

2.1 Theoretical Review

Diffusion Innovation Theory

Rogers (1995) developed the diffusion of innovation theory to clarify the mechanism by which an invention propagates within a social system. The author asserts that the adoption process consists of five distinct stages: awareness, persuasion, decision, implementation, and confirmation. During the knowledge phase, an individual obtains information regarding innovation and develops an understanding of its operation. The persuasion stage is characterised by the development of either a negative or a favourable attitude towards innovation in an individual. During the decision-making process, individuals actively participate in actions that contribute to the determination of whether to accept or reject an idea (Niu, 2020). In the execution, an individual carries out the implementation of a chosen concept. The validation stage is the last phase in which the evaluation is conducted to ascertain the soundness of the decision to adopt innovation. Rogers (1995) proposed three insightful notions: the effectiveness of disseminating and embracing innovations can be reinforced by the superior quality of the innovation, direct interaction among peers, and comprehension of the needs of various user groups. Schumpeter (1928) highlighted the abrupt and disruptive character of technological advancement in capitalism, resulting in an indissoluble blend

of unquenchable industrial expansion in both the short and long term. While he did not subscribe to the theory of technological determinism, he acknowledged the significant influence of social and organisational factors in his cyclical process of industrial transformation. Nevertheless, the uniqueness of this study resides in the disruptive character of the financial innovation implemented in deposit money institutions, aimed at enhancing their performance in terms of profitability, liquidity, or efficiency.

2.2 Empirical Review

The empirical review of the study shows that most literature like Adiga & Haruna (2024), Kipchoge & Mutuku (2024), Siasulingana & Haabazoka (2024), Ashiru et al. (2023), Enoruwa et al. (2023), Okeke & Ezeala (2023), Effiom & Edet (2022), Ibe & Obialor (2022), Ibekwe (2021), Chukwunulu & Ibenta (2021), Olalere et al. (2021), Gambo (2020), and Chukwunulu (2019) all conceptualised financial innovation as an explanatory variable and financial performance as dependent variable. The common measures used for financial innovation by Adiga & Haruna (2024), Kipchoge & Mutuku (2024), Siasulingana & Haabazoka (2024), and Gambo (2020), include automated teller machine (ATM), Mobile banking, internet banking and point of sale (POS). Also, financial performance measures used by Adiga & Haruna (2024), Ashiru et al. (2023), Ibe & Obialor (2022), only concentrated on return on assets, bank deposits, loans and advances, liquidity ratio and firm value, with the gap still yet to be filled in capturing financial performance with the loan-to-deposit ratio, which explains the intermediation capacity of the supposed deposit money banks in Nigeria, that shows their contributory capacity in ensuring economic growth and an increase in investment density.

Studies by Ashiru et al. (2023), Enoruwa et al. (2023), Okeke & Ezeala (2023), Effiom & Edet (2022), Ibe & Obialor (2022), and a large percentage of inquiries relied so much on secondary data sourced from the central bank's statistical bulletin and financial reports, which informed only the usage of ordinary least square regression, autoregressive distributed lag and general regression analysis. Studies like Olalere et al. (2021) and Gambo (2020) used the theoretical anchor of innovation diffusion theory and technology acceptance theory to examine the relationship between financial innovation and the financial performance of deposit money banks in Nigeria. However, some studies like Effiom & Edet (2022), Chukwunlu (2019) and Olalere et al. (2021) capture quite different directions on empirically examining how financial innovation measures affect SME's performance, economic growth and firm value. Also, some studies have isolated the channels of financial innovation channels on various measures of financial performance (Kipchoge & Mutuku, 2024), whereas Okeke & Ezeala (2023), Effiom & Edet (2022), Ibe & Obialor (2022), and Ibekwe (2021) adopted a more comprehensive approach by combining the various identified financial innovation measures on financial performance. Methodological differences are also evident in research design and estimation techniques, ranging from time series and panel data analyses to case studies and cross-country comparisons. Advanced techniques such as Generalized Method of Moments (GMM), Fully Modified OLS (FMOLS), and Dynamic OLS (DOLS) are used in some studies, while others rely on simpler OLS models.

Conclusively, Kipchoge & Mutuku (2024), Siasulingana & Haabazoka (2024), Ashiru, et al. (2023), Enoruwa et al. (2023), Ibe & Obialor (2022) and Ibekwe (2021) revealed that financial innovation indicators have a positive and significant effect on the performance of deposit money banks, while studies like Adiga & Haruna (2024), Okeke & Ezeala (2023) and Chukwunulu & Ibenta (2021) show a negative significant effect between components of financial innovation and financial performance. This calls for empirical and theoretical inquiry in validating or refuting the findings of various empirical works and the theoretical position of diffusion innovation theory.

3.0 Methodology

The descriptive research design was employed, which allowed the usage of secondary time series data that was sourced from the Central Bank of Nigeria Statistical Bulletin from 2012 to 2022. The time series data used for the model was captured from 2012 to 2022, which is eleven years, but was converted to quarterly data, which makes 44 unit points. This was done to accommodate the ordinary least squares period condition.

3.1 Model Specification

The section captures the model that was employed for testing the relationship between financial innovation measures and the performance of deposit money banks in Nigeria. This model was adapted and adjusted to explore the present study from the studies of Ashiru et al. (2023), Okeke & Ezeala (2023) and Ibe & Obialor (2022). This study adopted the following model by capturing all the independent variables in the works of Ashiru et al. (2023), but employed the dependent variables in the works of Okeke & Ezeala (2023) and Ibe & Obialor (2022). This study intends to give a quantitative approach to the dependent variables captured in Okeke & Ezeala (2023), who used a qualitative approach to explain the financial intermediation component that determines the financial dexterity and performance of deposit money banks.

The linear equation is given below;

$$FP_{LDR} = f(FI) \dots\dots\dots 1$$

$$FI_t = f(ATM, WEB, MOM, NEFT, POS, NIP, INT) \dots\dots\dots 2$$

$$LDR_t = f(ATM, WEB, MOM, NEFT, POS, NIP, INT) \dots\dots 3$$

$$LDR_t = (\alpha_0 + \beta_1 ATM_i + \beta_2 WEB_i + \beta_3 MOM_i + \beta_1 NEFT_i + \beta_2 POS_i + \beta_3 NIP_i + \beta_3 INT_i + \mu_t) \dots 4$$

Where;

FP; Financial Performance at time i

FI; Financial Innovation at time i

Outcome variable

LDR: Loan-to-deposit ratio time i

Explanatory variables

ATM; Automated teller machine value at time i

POS; Point of sale value at time i

WEB; Web-pay/internet value time i

MOM; Mobile money payment value at time i

NEFT; National Electronic Fund Transfer value at time i

NIP; NIBSS Instant payment value at time i

α = Intercept

$\alpha_1- \alpha_6$ = Coefficient of the Independent Variables.

4.0 Results and Discussion

4.1 Descriptive Analysis

	LDR	ATM	MOM	NEFT	NIP	POS	WEB	INT
Mean	60.65845	8.835777	7.918563	7.657306	8.173072	8.084238	7.273657	9.579996
Median	60.47750	8.903388	7.679469	7.474716	8.466823	8.165147	7.044695	8.846112
Maximum	79.95000	9.203899	9.269831	8.237525	9.059103	9.589478	10.14811	15.78000
Minimum	37.55947	8.470435	6.361291	7.427500	6.648326	6.412896	6.017916	5.459353
Std. Dev.	11.74992	0.236016	0.798155	0.285039	0.727617	0.955567	1.082374	2.963259
Skewness	-0.509436	0.058767	-0.080636	1.035474	-0.778612	-0.046504	1.539737	0.753971
Kurtosis	2.821113	1.835306	2.530069	2.421412	2.482664	2.105760	5.016380	2.682785
Jarque-Bera	1.961854	2.512264	0.452547	8.476583	4.936405	1.481910	24.83973	4.353275
Probability	0.374963	0.284753	0.797500	0.014432	0.084737	0.476658	0.000004	0.113422
Sum	2668.972	388.7742	348.4168	336.9215	359.6151	355.7065	320.0409	421.5198
Sum Sq. Dev.	5936.602	2.395261	27.39324	3.493640	22.76531	39.26366	50.37595	377.5788
Observations	44	44	44	44	44	44	44	44

Author's Compilation, 2024

The descriptive statistics show that the loan-to-deposit ratio (LDR) recorded an average value of 60.6% with a median of 60.4%, indicating a fairly stable distribution around the mean, although it exhibits relatively high variability with a standard deviation of 11.7. Other financial innovation variables, such as ATM, mobile money (MOM), NEFT, NIP, POS, and web transactions, have mean values ranging between approximately 7% and 9%, suggesting moderate and consistent levels of electronic banking activities. Among these, web transactions and POS display slightly higher variability, while ATM transactions are the most stable. Interest rate (INT) shows a higher mean of 9.57% and the largest variability (2.96), indicating greater fluctuations compared to other variables.

In terms of dispersion, LDR shows the widest range, with values spanning from 37.5 to 79.9, reflecting significant variation in banks' lending behaviour relative to deposits. In contrast, the innovation variables exhibit narrower ranges, indicating more stability over time. Interest rate also demonstrates a wide range (5.45 to 15.79), further confirming its volatility relative to other variables.

The skewness statistics reveal that most variables are approximately symmetrically distributed, though slight deviations exist. LDR, MOM, NIP, and POS are negatively skewed, implying a concentration of higher values, while ATM, NEFT, WEB, and INT are positively skewed, indicating a tendency toward lower values with some extreme observations. Kurtosis results show that most variables are platykurtic, suggesting a flatter distribution with fewer extreme values, except for web transactions, which are leptokurtic, indicating the presence of outliers.

Finally, the Jarque-Bera test indicates that most variables, including LDR, ATM, MOM, NIP, POS, and INT, are normally distributed, as their probability values exceed the 5% significance level. However, NEFT and WEB deviate from normality, as evidenced by their significant Jarque-Bera statistics.

Table 4.2: Correlation Matrix

	LDR	ATM	MOM	NEFT	NIP	POS	WEB	INT
LDR	1							
ATM	0.3475	1						
MOM	0.3310	0.8875	1					
NEFT	0.0019	0.5707	0.5597	1				
NIP	0.5285	0.5386	0.5556	0.4755	1			
POS	0.3691	0.5627	0.5719	0.5466	0.5969	1		
WEB	0.2355	0.4924	0.5773	0.1246	0.5143	0.5564	1	
INT	-0.0131	0.7484	0.5986	0.5185	0.4775	0.5780	0.4792	1

Author's Compilation, 2024.

Table 4.2 illustrates that web pay, NIBSS instant payment, point of sale, National electronic fund transfer, mobile money payment, and automated teller have a positive relationship with the loan-to-deposit ratio of deposit money banks in Nigeria, with a negative relationship with interest rate.

Table 4.3: Augmented Dickey Fuller (ADF) Unit root test

Variables	Level	First Difference	Order of Integration
	Constant	Constant	
LDR	-2.9314	-2.9331*	I(I)
ATM	-2.9314	-2.9331*	I(I)
MOM	-2.9314	-2.9331*	I(I)
NEFT	-2.9314	-2.9331*	I(I)
NIP	-2.9314	-2.9331*	I(I)
POS	-2.9389	-2.9389**	I(I)
WEB	-2.9389*	-----	I(0)
INT	-2.9314	-2.9331*	I(I)

Note: * $P < 0.01$, ** $P < 0.05$

Author's Compilation (2024)

Table 4.3 helps to inform the level of stationarity among the selected variables. It shows that web pay is stationary at a level, while interest rate, Point of sale, NIBSS Instant payment, National electronic fund transfer, automated teller machine, mobile money payment and loan-to-deposit ratio are stationary in first difference. This informs the auto-regressive distributed lag method of analysis.

Table 4.4 Lag length selection criteria

Lag	LogL	LR	FPE	AIC	SIC	HQ
0	-160.0348	NA	5.01e-07	8.196820	8.531176	8.318574
1	85.99074	384.0399*	7.40e-11*	-0.682475*	2.326725*	0.413309*
2	100.2678	16.71461	1.21e-09	1.743034	7.427078	3.812849
3	133.7089	26.10039	1.70e-08	3.233711	11.59260	6.277557

Author's Compilation (2024)

Table 4.4 shows the Akaike criterion information of the order of lag length (I) for the constructed model. So, the short and long-run estimates of the ARDL are indicated below:

Table 4.5: Autoregressive Distributed Lag (ARDL) Estimates

Variable	Coefficient	Std. Error	t-statistic	Prob
LDR(-1)	0.870582	0.083969	10.36787	0.0000
ATM	131.0106	36.98763	3.542012	0.0013
ATM(-1)	-112.7049	32.33629	-3.485398	0.0015
WEB	-1.083658	1.538924	-0.704166	0.4868
MOM	30.81832	13.21205	2.332591	0.0266
MOM(-1)	-18.05552	11.16697	-1.616869	0.1164
NEFT	-10.00355	12.54405	-0.797474	0.4314
POS	-49.45331	16.09129	-3.073297	0.0045
POS(-1)	40.33802	15.97604	2.524907	0.0171
NIP	7.094585	8.332164	0.851470	0.4013
NIP(-1)	-10.78104	6.899702	-1.562537	0.1287
INT	-0.143563	0.655650	-0.218964	0.8282
C	-65.18688	201.5646	-0.323404	0.0486
R-squared	0.905571			
Adj R-squared	0.867799			
F-statistic	23.97493		Durbin-Watson	2.368632
Prob(F-statistic)	0.000000			

Author's Compilation (2024)

The previous LDR (Loan-to-deposit ratio) (-1) has a positive significant effect on LDR (Loan-to-deposit ratio), ATM (Automated teller machine) (-1) has a positive significant effect on LDR (Loan-to-deposit ratio), WEB (Web pay/Internet) has a negative, insignificant effect on LDR (Loan-to-deposit ratio), MOM (Mobile money payment) has a positive significant effect on LDR (Loan-to-deposit ratio), NEFT (National Electronic Fund transfer) has a negative insignificant effect on LDR (Loan-to-Deposit Ratio), POS (Point of Sale) has a positive significant effect on LDR (Loan-to-deposit ratio), NIP (NIBSS Instant payment) has a negative insignificant effect on LDR (Loan-to-deposit ratio), INT (Interest rate) has a negative insignificant effect on LDR (Loan-to-deposit ratio) and the Durbin Watson value of 2.3 shows no presence of serial autocorrelation among the explanatory variables in the model.

Table 4.6: Bound Test Result

t-statistics	Value	K	I(0)	I(1)
F-statistics	1.218112	7	2.32	3.5

Bound test at 5% level of significance

Table 4.6 shows, from the F-statistics value, that the lower bound and upper bound are higher than the F-statistic value at 5% level of significance. The table shows no long-run relationship between those variables.

Table 4.7: Co-integration Form

Variable	Coefficient	Std-Error	t-Statistic	Prob
D(ATM)	131.010613	36.987628	3.542012	0.0013
D(WEB)	-1.083658	1.538924	-0.704166	0.4868
D(MOM)	30.818317	13.212055	2.332591	0.0266
D(NEFT)	-10.003550	12.544046	-0.797474	0.0314
D(POS)	-49.453306	16.091289	-3.073297	0.0045
D(NIP)	7.094585	8.332164	0.851470	0.4013
D(INT)	-0.143563	0.655650	-0.218964	0.8282
ECM(-1)	-0.129418	0.083969	-1.541259	0.0337

Author's Compilation (2024)

Table 4.7 presents the short-run dynamics between the dependent variable and the explanatory variables. The results indicate that the speed of adjustment from short-run disequilibrium to long-run equilibrium, captured by the error correction term [CointEq(-1)], is negative and statistically significant with a coefficient of -0.170238. This confirms the existence of a stable adjustment mechanism. The magnitude of the error correction term (-0.129418) suggests that approximately 12% of the previous year's deviation from long-run equilibrium is corrected annually. This further supports the presence of a meaningful short-run relationship among the variables in the model.

From the short-run estimates, Automated Teller Machine (ATM) transactions exert a positive and significant effect on the loan-to-deposit ratio (LDR), indicating that a unit increase in ATM usage leads to a corresponding increase of about 131.0 units in LDR. Similarly, Mobile Money Payments (MOM) show a positive and significant impact, implying that an increase in mobile transactions enhances LDR by approximately 30.81 units. In contrast, National Electronic Fund Transfer (NEFT) and Point of Sale (POS) transactions have negative and significant effects on LDR, suggesting that increases in these variables reduce LDR by about 10.00 and 49.4 units, respectively.

However, Web-based transactions (WEB) exhibit a negative but statistically insignificant relationship with LDR, indicating that although increases in web transactions tend to reduce LDR, the effect is not strong enough to be considered significant. Likewise, NIBSS Instant Payments (NIP) display a positive but insignificant effect, while interest rate (INT) shows a negative and insignificant relationship with LDR. Overall, the findings reveal that while some financial innovation channels significantly influence bank lending behaviour in the short run, others do not exert a statistically meaningful impact.

Table 4.8: Long run Coefficients

Variable	Coefficient	Std-Error	t-Statistic	Prob
ATM	141.446352	249.282958	0.567413	0.5747
WEB	-8.373296	11.546951	-0.725152	0.0040
MOM	98.616617	93.068296	1.059616	0.0078
NEFT	-77.296267	88.576424	-0.872651	0.3898
POS	-70.432721	108.488420	-0.649219	0.0211
NIP	-28.484823	35.651217	-0.798986	0.4306
INT	-1.109298	4.899630	-0.226404	0.0224
C	-503.691411	1468.609770	-0.342972	0.7340

Author's Compilation (2024).

The Long-run coefficient Table 4.8 depicts that ATM (Automated teller machine) has a positive insignificant effect on LDR (Loan-to-deposit ratio), WEB (Web pay/Internet) has a negative significant effect on LDR (Loan-to-deposit ratio), MOM (Mobile money payment) has a positive significant effect on LDR (Loan-to-deposit ratio), NEFT (National Electronic Fund transfer) has a negative insignificant effect on LDR (Loan-to-Deposit Ratio), POS (Point of Sale) has a negative significant effect on LDR (Loan-to-deposit ratio), NIP (NIBSS Instant payment) has a negative insignificant effect on LDR (Loan-to-deposit ratio) and INT (Interest rate) has a negative significant effect on LDR (Loan-to-deposit ratio).

5. Discussion of Findings

The short-run results from the bounds test reveal mixed effects of digital banking channels on the loan-to-deposit ratio (LDR). Automated Teller Machines (ATM) and Mobile Money Payments (MOM) exhibit positive and statistically significant effects on LDR, suggesting that increased usage enhances banks' lending capacity and deposit mobilisation. In contrast, National Electronic Fund Transfer (NEFT) and Point of Sale (POS) show a negative and significant effect, indicating that their expansion may constrain loan growth. Web-based transactions (WEB) and NIBSS Instant Payments (NIP) display insignificant relationships with LDR, despite WEB being negative and NIP positive, while interest rate (INT) also has a negative but insignificant influence. These findings are consistent with prior studies such as Ibekwe (2021), Siasulingana & Haabazoka (2024), Kipchoge & Mutuku (2024), and Gambo (2020), which reported significant positive effects of digital banking on performance, while also aligning with Chukwunulu & Ibenta (2021) and Okeke & Ezeala (2023), who documented negative or insignificant impacts for some channels. Overall, the results support the broader empirical evidence by Ibe & Obialor (2022), Effiom & Edet (2022), and Ashiru et al. (2023), highlighting that the influence of financial innovation on bank performance is channel-specific and varies in the short run.

6.0 Conclusion and Recommendations

The results indicate that, in the short run, Automated Teller Machines (ATM) and Mobile Money Payments exert a positive and statistically significant influence on the Loan-to-Deposit Ratio (LDR), implying that these channels strengthen financial intermediation by enhancing deposit mobilisation and supporting lending activities. In contrast, National Electronic Fund Transfer (NEFT) and Point of Sale (POS) transactions exhibit a significant negative effect on LDR, suggesting that their increased usage may constrain loan expansion or weaken deposit accumulation. This highlights the heterogeneous impact of digital banking platforms on banks' liquidity position and operational efficiency. In light of these findings, it is recommended that deposit money banks intensify investment in ATM and mobile payment technologies, as they

contribute positively to financial performance. At the same time, the adverse effects associated with NEFT and POS transactions necessitate a reassessment of their operational frameworks, with a view to improving their efficiency and aligning them more closely with the objectives of loan growth and effective liquidity management.

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