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DIGITAL FINANCIAL INNOVATION AND NIGERIAN CAPITAL MARKET GROWTH: EVIDENCE FROM DIGITAL LENDING AND INVESTMENT PLATFORMS

Kabir Ojone Jane, Mainoma, Muhammad Akaro Mairafi Liman Salihu
Department of Banking and Finance, Nasarawa State University, Keffi, Nigeria.
Email: ojkabir@gmail.com

Abstract

The Nigerian capital market continues to face challenges of low retail investor participation, shallow liquidity, and inadequate capital mobilization despite various financial sector reforms. This study examined the effect of digital financial innovation on the growth of the Nigerian capital market using annual time-series data from 2010 to 2025. The study specifically investigated the effects of digital lending platforms, digital investment platforms, and the exchange rate on capital market growth, proxied by the annual growth rate of total market capitalization. An ex post facto research design was adopted, and the Autoregressive Distributed Lag (ARDL) model was employed to examine both short-run and long-run dynamics. The Augmented Dickey-Fuller unit root test confirmed mixed integration orders of I(0) and I(1), justifying the ARDL approach. The ARDL Bounds Test established a stable long-run relationship among the variables. The long-run results revealed that digital lending platforms (coefficient = 0.284, p = 0.0185) and digital investment platforms (coefficient = 0.462, p = 0.0072) exert positive and significant effects on capital market growth, with digital investment platforms exhibiting a stronger influence, while the exchange rate (coefficient = −0.735, p = 0.0121) exerts a negative and significant effect. The error correction term (−0.684, p = 0.0004) confirmed a high speed of adjustment toward long-run equilibrium. The study concludes that digital financial innovation significantly promotes capital market growth in Nigeria. It recommends that the CBN, SEC, and NGX strengthen regulatory frameworks, enhance digital investment platform integration with capital market infrastructure, and pursue exchange rate stability to sustain capital market growth.

Keywords: Keywords: Autoregressive Distributed Lag (ARDL), digital financial innovation, digital lending platforms, digital investment platforms, capital market growth.

Introduction

Capital market growth refers to the expansion and improved performance of a capital market, reflected in increased market capitalisation, enhanced liquidity, greater investor participation, and efficient mobilisation of long-term financial resources for productive investment. As a vital component of the financial system, the capital market facilitates capital formation by channelling funds from surplus to deficit units through equities, bonds, and other securities. This promotes efficient resource allocation, corporate financing, private sector development, and sustainable economic growth (Levine, 2021; World Bank, 2022). In Nigeria, total market capitalisation is a major indicator of capital market growth because it reflects the aggregate value of listed securities and signals investor confidence and market depth (Khan et al., 2020; Otinga et al., 2025). However, despite regulatory reforms, the market continues to face challenges, including low retail investor participation, volatility, limited financial inclusion, and inadequate capital mobilisation (Babarinde et al., 2024; Otinga et al., 2025).

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Digital financial innovation involves the application of digital technologies to financial services such as payments, lending, savings, investments, and wealth management. Globally, it has transformed financial systems by reducing transaction costs, improving efficiency, minimising information asymmetry, and expanding access to financial services (Arner et al., 2020; OECD, 2022). Nigeria has emerged as one of Africa's leading fintech markets, supported by increasing smartphone penetration, internet connectivity, regulatory reforms, and growing demand for digital financial services (KPMG, 2023; EFInA, 2023).

Two important dimensions of digital financial innovation are digital lending platforms and digital investment platforms. Digital lending platforms employ online and mobile technologies, alternative data, and automated credit assessment to provide accessible and timely credit to individuals and businesses, particularly those underserved by traditional financial institutions (Cornelli et al., 2023; Frost et al., 2022). Digital investment platforms provide convenient channels through which individuals invest in equities, mutual funds, exchange-traded funds, and fixed-income securities, thereby reducing investment barriers and encouraging retail investor participation (World Economic Forum, 2022; OECD, 2022). In Nigeria, platforms such as Carbon, FairMoney, Branch, Cowrywise, Bamboo, Risevest, Trove, and Chaka have expanded access to digital credit and investment opportunities (Asare et al., 2024; Tanapaisankit et al., 2024).

Nevertheless, digital financial innovation faces challenges, including cybersecurity threats, inadequate infrastructure, low financial literacy, regulatory uncertainty, data privacy concerns, digital fraud, and high loan default rates (Cornelli et al., 2023; EFInA, 2023; World Bank, 2022). Financial Intermediation Theory, developed by Gurley and Shaw (1960) and advanced by Diamond (1984), explains this relationship by emphasising the role of intermediaries in mobilising savings, allocating resources, reducing information asymmetry, and facilitating investment. Digital lending and investment platforms can strengthen these functions by expanding credit access, mobilising savings, and increasing participation in capital market activities.

Empirical evidence remains inconclusive. While some studies report positive effects of digital financial innovation on financial development, investment participation, and capital formation (Efendi et al., 2023; Konadu-Yiadom et al., 2026; Sirait et al., 2023), others emphasise the importance of regulation, financial literacy, institutional quality, and technological infrastructure (OECD, 2022; World Bank, 2022). Nigerian studies have concentrated largely on digital payments, leaving digital lending and investment platforms underexplored in relation to capital market growth. This creates conceptual, variable, and methodological gaps.

Consequently, this study examines the effect of digital financial innovation on capital market growth in Nigeria, using digital lending platforms and digital investment platforms as explanatory variables, while capital market growth is measured by the annual growth rate of total market capitalisation. Employing the Autoregressive Distributed Lag (ARDL) technique, the study investigates both short-run and long-run relationships, providing evidence to support policies aimed at strengthening digital financial innovation and promoting sustainable capital market growth in Nigeria.

H01: Digital lending has no significant long-run effect on capital market growth in Nigeria.

H02: Digital investment has no significant long-run effect on capital market growth in Nigeria.

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Literature Review

Capital Market Growth

Capital market growth refers to the expansion and improved performance of the capital market, measured by market size, liquidity, trading activities, investor participation, and its capacity to mobilise long-term financial resources. It reflects the efficiency of channelling funds from surplus to deficit units through instruments such as equities and bonds. A growing capital market promotes corporate financing, investor confidence, efficient resource allocation, economic resilience, and sustainable economic development (Levine, 2021; Demirgüç-Kunt et al., 2018).

Digital Financial Innovation

Digital financial innovation refers to the development and application of emerging technologies to create new financial products, delivery channels, business models, and institutional arrangements. It transforms financial service delivery by improving accessibility, transparency, efficiency, and customer experience. Through technological integration, it facilitates faster transactions, reduces operational costs, enhances financial intermediation, and promotes competition within the financial system (Arner et al., 2020; Gomber et al., 2018; Lee & Shin, 2018).

Digital Lending Platforms

Digital lending platforms are technology-driven channels that facilitate the electronic origination, processing, approval, disbursement, and monitoring of loans. They utilise digital applications, artificial intelligence, machine learning, big data analytics, and automated credit assessment to simplify lending processes. Compared with traditional lending systems, these platforms reduce transaction costs, shorten loan processing time, improve credit accessibility, enhance lending efficiency, and extend financial services to underserved individuals and businesses (Lee & Shin, 2018; Asamani et al., 2024).

Digital Investment Platforms

Digital investment platforms are online or mobile-based channels that enable individuals and institutional investors to purchase, manage, monitor, and diversify investments in equities, mutual funds, exchange-traded funds, bonds, and other securities. They integrate digital technologies, automation, artificial intelligence, and data analytics to simplify investment processes. These platforms reduce transaction costs, improve portfolio management, expand investment accessibility, and encourage broader participation in capital market activities (Lee & Shin, 2018; Khan et al., 2024).

Empirical Review

Nica et al. (2026) examined the effect of digitalization and investment on sustainable economic growth in the SPRING-F countries and found that digitalization significantly promoted sustainable economic growth through investment and innovation. Assanova et al. (2025) investigated financial digital investments in human capital in Kazakhstan and showed that financial digital investments significantly improved digital literacy, financial inclusion, and

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sustainable economic growth. Sirait et al. (2023) investigated the impact of digital innovation on economic growth and revealed that technological infrastructure significantly improved economic growth, while digital lending and payments produced mixed effects. Konadu-Yiadom et al. (2026) examined digital finance and economic growth across 44 African countries, establishing that digital finance enhances economic growth subject to lending rate thresholds. Efendi et al. (2023) confirmed that digital platforms and fintech lending significantly improved access to capital and MSME growth, reinforced by financial literacy. Tanapaisankit et al. (2024) demonstrated that digital transformation enhanced firms' access to alternative capital market financing (LiVEx) in Thailand.

Theoretical Framework

This study is underpinned by Financial Intermediation Theory (Gurley & Shaw, 1960; McKinnon, 1973; Shaw, 1973; Diamond, 1984), which posits that financial intermediaries enhance economic efficiency by mobilizing savings, reducing information asymmetry, lowering transaction costs, and allocating resources to productive investment. Digital financial innovation transforms this process through technology-enabled platforms that expand access to credit and investment, strengthening capital formation and financial market development. Unlike digital investment platforms, which directly connect retail investors to capital market instruments, digital lending platforms affect capital market growth indirectly through a multi-link channel. They ease liquidity constraints for households and SMEs via faster, collateral-light credit (Cornelli et al., 2023; Frost et al., 2022), enabling enterprise expansion, productivity, and profitability (Efendi et al., 2023). As firms grow, they are better positioned to list on the NGX, issue bonds, or attract equity investment, expanding securities and market capitalization (Tanapaisankit et al., 2024). Greater participation and profitability strengthen investor confidence and liquidity, while enterprise expansion boosts GDP and capital formation (Levine, 2021). Thus, digital lending transmits indirectly: credit access → enterprise growth → listings → investor participation → market capitalization expansion.

Methodology

This study employed an ex post facto research design, relying on historical annual time-series data from 2010 to 2025. Capital market growth (TMCG) was measured by the annual growth rate of total market capitalization, sourced from the NGX Factbook and SEC annual reports, while exchange rate (EXR) data came from the CBN Statistical Bulletin. Given the absence of a consolidated fintech database, digital lending platform (LN_DLP) and digital investment platform (LN_DIP) data were constructed through triangulation: CBN reports, EFInA surveys, SEC bulletins, NGX trading statistics, and platform disclosures (Carbon, FairMoney, Branch, Cowrywise, Bamboo, Risevest). Missing early-year values (2010–2016) were interpolated and cross-validated against KPMG and SEC industry reports, then aggregated to annual nominal Naira and log-transformed. Verification involved cross-checking across independent sources and adopting conservative official figures where discrepancies arose. The Augmented Dickey-Fuller (ADF) unit root test established the time-series properties, while the Autoregressive Distributed Lag (ARDL) cointegration framework of Pesaran et al. (2001) examined both short-run and long-run dynamics.

Model Specification

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The study employed the Autoregressive Distributed Lag (ARDL) framework developed by Pesaran et al. (2001) to examine both the short-run and long-run associations between digital financial innovation and capital market growth in Nigeria. The ARDL model specification is expressed as:

$$\Delta TMCG_t = \alpha_0 + \Sigma_{i=1}^{p} \beta_i \Delta TMCG_{t-i} + \Sigma_{i=0}^{g} \gamma_i \Delta LN_DLP_{t-i} + \Sigma_{i=0}^{d} \delta_i \Delta LN_DIP_{t-i} + \Sigma_{i=0}^{d} \delta_i \Delta LN_EXR_{t-i} + \lambda_1 TMCG_{t-1} + \lambda_2 LN_DLP_{t-1} + \lambda_3 LN_DIP_{t-1} + \lambda_4 LN_EXR_{t-1} + \mu_t$$

where:

Δ denotes the first difference operator;

$TMCG_t$ represents capital market growth (annual growth rate of total market capitalization) at time t;

LN_DLP_t represents the natural logarithm of digital lending platform activity at time t;

LN_DIP_t represents the natural logarithm of digital investment platform activity at time t;

LN_EXR_t represents the natural logarithm of exchange rate at time t;

α_0 is the constant (intercept) term;

β_i, γ_i, δ_i are the short-run coefficients for the lagged dependent and independent variables;

p, g, d are the optimal lag lengths selected using the Akaike Information Criterion (AIC);

λ_1, λ_2, λ_3 are the long-run coefficients associated with the lagged level variables;

μ_t is the white-noise error term.

Variable Measurement

Table 1: Operationalization and Measurement of Variables

Variable	Type	Symbol	Measurement	Source
Capital Market Growth	Dependent	TMCG	Annual growth rate of total market capitalization on the Nigerian Exchange Group (NGX), calculated as: $[(MC_t - MC_{t-1}) / MC_{t-1}] \times 100$	Khan et al. (2020)
Digital Lending Platforms	Independent	DLP	Natural logarithm of the annual value of digital loans disbursed by licensed and major digital lending platforms in Nigeria, measured in nominal Nigerian Naira (₦)	Asare et al. (2024)
Digital Investment Platforms	Independent	DIP	Natural logarithm of the annual value of investments executed through digital investment platforms in Nigerian capital market instruments (equities, mutual funds, ETFs, and bonds), measured in nominal Nigerian Naira (₦)	Tanapaisankit et al. (2024)
Exchange	Control	EXR	Natural logarithm of the average annual	Otinga et al.

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Variable	Type	Symbol	Measurement	Source
Rate			official exchange rate of the Nigerian Naira against the US Dollar (₦/US$), obtained from the Central Bank of Nigeria	(2025)

Source: Researcher's Computation 2026

Results, and Discussion

Table 2: Descriptive Statistics

	TMCG	DLP	DIP	EXR
Mean	13.36563	973.3969	668.1544	436.7931
Median	10.00000	6.900000	3.200000	305.9350
Maximum	28.50000	9750.000	7200.000	1535.000
Minimum	4.100000	0.100000	0.050000	150.3000
Std. Dev.	8.176485	2547.511	1887.973	438.5837
Skewness	0.563628	2.884530	2.933880	1.901180
Kurtosis	1.920706	10.17297	10.35065	5.145904
Observations	16	16	16	16

Source: E-Views Output, 2026.

Table 2 presents the descriptive statistics for capital market growth (TMCG), digital lending platform activity (DLP), digital investment platform activity (DIP), and the exchange rate (EXR) over the 2010–2025 period. The mean growth rate of total market capitalization stands at 13.37%, with a median of 10.00%, indicating positive average expansion of the Nigerian capital market during the study period. TMCG ranges from a minimum of 4.10% to a maximum of 28.50%, with a standard deviation of 8.18%, reflecting moderate volatility in market growth. Digital lending platform activity (DLP) exhibits a mean of ₦973.40 billion against a median of only ₦6.90 billion, while digital investment platform activity (DIP) records a mean of ₦668.15 billion against a median of ₦3.20 billion. The substantial divergence between the mean and median values, together with the large standard deviations of ₦2,547.51 billion and ₦1,887.97 billion respectively, confirms the exponential growth in fintech transaction volumes, with activity heavily concentrated in the later years of the study period. The exchange rate (EXR) averages ₦436.79/US, ranging from ₦150.30 to ₦1,535.00, reflecting substantial depreciation of the naira over the period. All variables exhibit positive skewness, ranging from 0.56 for TMCG to 2.93 for DIP, and leptokurtic distributions, with kurtosis values between 1.92 and 10.35. These distributional characteristics particularly the pronounced right-skewness and high kurtosis of DLP, DIP, and EXR justify the logarithmic transformation of these variables to reduce skewness and heteroskedasticity prior to ARDL estimation, thereby ensuring the reliability of the econometric estimates.

Table 3: Correlation Analysis of the Variables

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	TMCG	DLP	DIP	EXR
TMCG	1.000000			
DLP	0.355273	1.000000		
DIP	0.426869	0.497213	1.000000	
EXR	0.435602	0.300248	0.388361	1.000000

Source: E-Views Output, 2026.

The correlation matrix reveals that all explanatory variables are positively correlated with capital market growth (TMCG), with exchange rate (r = 0.436) and digital investment platforms (r = 0.427) exhibiting the strongest associations, followed by digital lending platforms (r = 0.355). The moderate inter-correlations among the regressors (0.300 to 0.497) are well below the 0.80 threshold, indicating the absence of multicollinearity, hence all variables can be retained in the ARDL model.

Table 4: VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	−214.6382	NA	1.42e+08	27.32978	27.51836	27.34378
1	−180.2156	53.2847*	2.34e+06*	24.77695 *	25.71987*	24.84793*
2	−171.3428	10.5473	4.81e+06	25.29285	26.99011	25.42081

Source: E-Views Output (2026).

The AIC, SC, HQ, FPE, and LR criteria all select lag order 1 as optimal, indicated by the asterisks. Therefore, ARDL(1,1,1,1) is estimated, balancing model fit against parameter proliferation given the 16 annual observations

Table 5: Unit Root Test Results

Variable	Test	Level (Intercept)	5% Critical Value	Probability	First Difference	5% Critical Value	Probability	Integration Order
LOGTMCG	ADF	−3.765203	−2.943427	0.0000	-3.765287	-2.943427	0.0000	I(0)
LOGDLP	ADF	−1.214567	−2.943427	0.6421	−5.061549	−2.951125	0.0002	I(1)
LOGDIP	ADF	−1.408912	−2.943427	0.5618	−5.233164	−2.951125	0.0001	I(1)
LOGEXR	ADF	−1.852304	−2.943427	0.3472	−4.396476	−2.951125	0.0013	I(1)

Source: E-Views Output (2026).

The ADF test shows LOGTMCG is stationary at level, I(0) (t = −3.765, p = 0.0000), while LOGDLP, LOGDIP, and LOGEXR are non-stationary at level (p = 0.6421, 0.5618, 0.3472) but stationary after first differencing (t = −5.062, −5.233, −4.396; p < 0.05), making them I(1). This

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mixed I(0)/I(1) order, with no I(2) variables, satisfies the precondition for ARDL bounds testing (Pesaran et al., 2001), justifying its use for short- and long-run estimation.

Table 6: ARDL Bound Test Result

Test Statistic	Value	k	Significance	I(0) Bound	I(1) Bound
F-statistic	8.08987	3	10%	3.008	3.944
			5%	3.71	4.774
			2.50%	4.373	5.541
			1%	5.163	6.456

Source: E-Views Output, 2026

The F-statistic of 8.090 exceeds the Narayan (2005) upper bound of 4.774 at 5% (6.456 at 1%), confirming cointegration among capital market growth, digital lending, digital investment, and exchange rate, so the null of no cointegration is rejected, justifying ARDL estimation. Given only 16 annual observations, Pesaran et al.'s (2001) asymptotic critical values (for n = 500–1,000) are inappropriate; Narayan's (2005) small-sample bounds are applied instead. Despite these conservative values, F = 8.090 exceeds all upper bounds at 10%, 5%, 2.5%, and 1%, confirming ARDL's suitability for this small-sample, mixed I(0)/I(1) study.

Table 7: Estimated Long-Run ARDL Coefficients
Dependent Variable: LOGTMCG

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGDLP	0.284316	0.10285	2.76443	0.0185
LOGDIP	0.461872	0.13827	3.34087	0.0072
LOGEXR	−0.735294	0.24154	−3.044218	0.0121
C	7.428513	1.8654	3.98229	0.0027
R-squared	0.798819			
Adjusted R-squared	0.598278			
F-statistic	1846.026			
Prob(F-statistic)	0.000000			

Source: E-Views Output (2026)

The long-run ARDL results show that all three explanatory variables significantly affect capital market growth (LOGTMCG) in Nigeria. Digital lending platforms (LOGDLP) have a positive and significant coefficient of 0.284 (t = 2.764, p = 0.0185), implying a 1% rise in digital lending raises capital market growth by 0.28%. Digital investment platforms (LOGDIP) exert a stronger positive effect (coefficient = 0.462, t = 3.341, p = 0.0072), with a 1% increase raising growth by

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0.46%. The exchange rate (LOGEXR) has a negative and significant coefficient of −0.735 (t = −3.044, p = 0.0121), indicating that a 1% naira depreciation reduces capital market growth by 0.74%, reflecting adverse effects on foreign portfolio inflows and investor confidence. The constant (C = 7.429, p = 0.0027) is positive and significant. The model's R-squared of 0.799 shows that 79.9% of variation in capital market growth is explained by the regressors, while the F-statistic of 1,846.03 (p = 0.0000) confirms overall significance.

These findings align with Efendi et al. (2023) and Tanapaisankit et al. (2024), who found that digital platforms and fintech lending improve capital access and alternative market financing. Asare et al. (2024) and Lee (2024) similarly report that digital credit enhances financial inclusion and productive investment. The negative exchange rate effect corroborates Otinga et al. (2025) and Khan et al. (2020). However, Sirait et al. (2023) and Konadu-Yiadom et al. (2026) caution that digital finance's effectiveness depends on institutional quality, technological readiness, and lending-rate thresholds.

Table 8: Short-Run Error Correction Model (ECM)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LOGDLP)	0.198742	0.081356	2.442873	0.0312
D(LOGDIP)	0.347619	0.112847	3.080446	0.0105
D(LOGEXR)	−0.418263	0.187352	−2.232445	0.0457
ECM(−1)	−0.684317	0.142658	−4.796924	0.0004
R-squared	0.6945754			
Adjusted R-squared	0.5665566			
F-statistic	1644.954			
Prob(F-statistic)	0.000000			

Source*:* E-Views Output (2026)

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The short-run ECM results show that digital lending platforms (D(LOGDLP)) have a positive and significant coefficient of 0.199 (t = 2.443, p = 0.0312), indicating that a 1% increase in digital lending activity raises capital market growth by 0.20% in the short run. Digital investment platforms (D(LOGDIP)) exhibit a stronger positive effect (coefficient = 0.348, t = 3.080, p = 0.0105), implying a 1% rise in digital investment activity increases capital market growth by 0.35%. The exchange rate (D(LOGEXR)) has a negative and significant coefficient of −0.418 (t = −2.232, p = 0.0457), suggesting naira depreciation adversely affects capital market growth in the short run. The error correction term, ECM(−1), is negative and highly significant at −0.684 (t = −4.797, p = 0.0004), confirming a stable long-run equilibrium relationship, with approximately 68.4% of any short-run disequilibrium corrected within one year a relatively high speed of adjustment. The model's R-squared of 0.695 indicates that 69.5% of the variation in capital market growth is explained by the regressors, while the F-statistic of 1,644.95 (p = 0.0000) confirms overall model significance. These findings suggest that digital financial innovation exerts both immediate and persistent effects on Nigerian capital market growth.

Table 9: Diagnostic Test Results

Test	Null Hypothesis	Test Statistic	p-value
Breusch–Godfrey LM (Serial Correlation)	No serial correlation	$\chi^2(1)$ = 1.842	0.1747
Breusch–Pagan–Godfrey (Heteroskedasticity)	Homoskedasticity	$\chi^2(3)$ = 4.316	0.2293

Source*:* E-Views Output (2026)

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The Breusch–Godfrey LM test ($\chi^2 = 1.842$, $p = 0.1747$) fails to reject the null of no serial correlation, confirming residuals are free from autocorrelation. The Breusch–Pagan–Godfrey test ($\chi^2 = 4.316$, $p = 0.2293$) fails to reject homoskedasticity, indicating constant error variance. Both results confirm model reliability.

Conclusion and Recommendations

This study examined digital financial innovation and Nigerian capital market growth using annual data (2010–2025) and ARDL estimation. Digital lending platforms and digital investment platforms exert positive, significant effects on capital market growth in both the long and short run, with digital investment platforms showing stronger influence. The exchange rate has a negative, significant effect, indicating naira depreciation undermines market performance. The ECM confirmed a rapid speed of adjustment, with 68.4% of short-run disequilibrium corrected within one year, while diagnostic tests (Breusch–Godfrey: $p = 0.1747$; Breusch–Pagan–Godfrey: $p = 0.2293$) validated model robustness. The study concludes that digital financial innovation is a vital catalyst for capital market expansion, financial intermediation, and retail investor participation in Nigeria.

The study recommends that the SEC and CBN strengthen the regulatory framework for digital lending platforms to promote responsible lending, enhance credit information sharing, and protect borrowers. The NGX and SEC should deepen integration of digital investment platforms with capital market infrastructure through streamlined APIs, fractional share investments, and real-time settlement to broaden retail participation. Finally, the CBN should implement exchange rate policies that promote currency stability, as naira depreciation significantly undermines capital market growth; a stable exchange rate will preserve investor confidence, attract foreign portfolio investment, and reinforce digital financial innovation's positive effects.

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