

Impact of Banking Habits Preference on Financial Performance of Selected Banks in Nigeria

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Abstract

This study investigates how banking habits preference shapes the financial performance of selected listed deposit money banks in Nigeria and whether operational efficiency amplifies this effect, against a backdrop of accelerating digitalisation, persistent financial-inclusion gaps and mounting pressure on bank margins. Anchored in financial-intermediation and behavioural-finance theories, the study employs a quantitative ex post facto panel design using annual bank-level data for 2010–2024. Financial performance is proxied by ROA, banking habits by digital transaction ratio, cash transaction share and account-usage index, and operational efficiency by cost-to-income and non-interest income ratios, with size, capital adequacy and macro controls; descriptive statistics, correlations and panel unit-root tests precede fixed-effects panel least squares baseline and moderation models. Results show that digital habits significantly raise profitability ($\beta = 0.85$; $z = 4.10$ & $P > z = 0.000$), while cash-intensive habits significantly depress it ($\beta = -0.64$; $z = -3.52$ & $P > z = 0.001$); operational efficiency strongly moderates this link, as the interaction between digital transactions and cost-to-income is positive and significant ($\beta = 0.95$; $z = 2.80$ & $P > z = 0.007$), with effects economically large and consistent with a shift from cash-based, low-usage behaviour to digital, high-engagement relationships. The study concludes that competitive advantage in Nigerian banking increasingly depends on managing the behaviour–efficiency nexus rather than scale alone. It recommends policies and strategies that incentivise sustainable digital usage, strengthen cost management, expand fee-based digital services, align fintech partnerships with core deposits and encourage further research using richer micro-data and dynamic models.

Keywords: banking habits preference, financial performance, digital transactions, operational efficiency, panel least squares.

JEL Codes: G21, G28, C23, O16.

Introduction

The global financial system has witnessed rapid shifts in how households and firms interact with banks, as customers increasingly choose between cash, cards, mobile apps, online platforms and emerging digital currencies, reshaping banks' revenue structures and risk profiles (Brown, 2022; Manikowski & Kotkowski, 2023). These banking habits preferences directly affect deposit stability, fee income, liquidity and profitability, making financial performance a core concern for shareholders, regulators and governments (Bueno & Rodríguez, 2024; Hidayat & Kurniawan, 2025). In

Nigeria, the push for cash-lite, digitally enabled finance has coincided with persistent financial-inclusion gaps and pressure on bank margins, heightening the need to understand how customer behaviour translates into bank performance outcomes. Theoretically, this nexus sits at the intersection of behavioural finance, payment-choice models and bank-performance theory, and recent disruptions such as fintech growth, central bank digital currencies and COVID-19 have intensified its policy relevance (Pancaró et al., 2023; Li, 2025).

Banking habits preference can be viewed as the consistent pattern of how customers save, transact and borrow whether via traditional branches and cash, or through digital channels and interoperable payment systems thereby shaping the volume, mix and cost of bank liabilities and fee-based income (Gaire, 2022; Nagarpalika, 2024). Behavioural finance and habit-formation perspectives suggest that repeated use of specific channels creates sticky routines that reduce switching and stabilise banks' funding base, while payment-choice models show that relative convenience, perceived security and network effects drive shifts from cash to electronic instruments with implications for cash demand and bank balance sheets (Brown, 2022; Copestake et al., 2025). Financial-intermediation and resource-based theories further propose that banks able to align product design and technology with evolving customer habits can convert behavioural advantages into superior financial performance through cost efficiencies, cross-selling opportunities and expanded customer bases (Bueno & Rodríguez, 2024; Hidayat & Kurniawan, 2025). Empirical evidence increasingly links customers' digital adoption, saving routines and payment preferences to bank profitability and stability, but results remain context-dependent.

Nigeria presents a particularly salient case: despite aggressive financial-inclusion campaigns, only about two-thirds of adults reportedly have formal accounts, cash remains dominant in retail payments, and reliance on mobile and fintech channels is rising unevenly across regions and customer segments (Financial Inclusion and Nigeria's Economic Performance, 2024; Economics of Digital Currencies, 2023). At the same time, Nigerian banks face pressure from non-bank digital platforms, evolving customer expectations and tightening regulatory capital standards, while reporting heterogeneous profitability and asset-quality trends (Oyetade, 2024). Compared with middle-income peers where digital habits have already translated into substantial non-interest income and leaner cost structures, Nigerian banks appear to be in a transition phase in which customer preferences could either reinforce or undermine financial

performance depending on how they are managed (Bueno & Rodríguez, 2024). This study therefore focuses on Nigeria while situating its evidence within a broader emerging-market panel, linking micro-behavioural preferences with bank-level and sector-wide financial outcomes in order to derive nuanced policy and managerial insights. Although interventions such as cash-less policies, fintech partnerships and digital-ID programmes have expanded account ownership and transaction options, their effectiveness has been uneven due to infrastructural bottlenecks, trust deficits and limited behavioural tailoring (Tudu, 2025; Copestake et al., 2025). Empirical studies linking banking habits, payment behaviour and bank outcomes are still sparse in Nigeria and other African markets, with existing work often limited to short time periods, single institutions or partial measures of performance, which constrains policy-relevant conclusions (Oyetade, 2024). The present study addresses this gap by constructing richer indicators of banking habits from bank reports, and by applying panel least squares to bank-level and cross-country data to quantify their effects on profitability. The specific objectives are to:

- i. Examine the impact of customers' banking habits preference on the financial performance of listed deposit money banks in Nigeria, and
- ii. determine the moderating role of operational efficiency in the relationship between banking habits preferences and overall financial performance

This study is significant because it provides new evidence on how specific banking habits preferences influence financial performance, enriching academic understanding of behaviour–performance linkages in emerging banking systems. It offers actionable insights to regulators, banks and fintech partners on designing policies and products that align with customer behaviour, and ultimately supports households, firms and communities through more stable and inclusive financial intermediation.

2. Literature Review

2.1 Conceptual Review

Banking habits preference, in its modern sense, traces back to early work on customer payment choice and account usage in retail banking and consumer finance, where researchers examined how individuals allocate transactions between cash, cards and bank accounts and how frequently they interact with formal institutions (Brown, 2022; Manikowski & Kotkowski, 2023). Recent studies conceptualise banking habits preference as a multi-dimensional construct capturing how often customers visit branches or ATMs, the breadth of services used, the relative weight attached to digital versus physical channels, and the consistency of saving and payment routines (Gaire, 2022; Nagarpalika, 2024). Some authors emphasise that stable, bank-centric habits foster deposit deepening and cross-selling opportunities, while others warn that the rise of fintech wallets and non-bank platforms may dilute the link between customer habits and bank-side performance (Copestake et al., 2025; Li, 2025). Operationally, banking habits preference is often proxied by indicators such as number of accounts per adult, ATM and POS transaction volumes, frequency of mobile and internet banking logins, or composite inclusion indices combining account ownership, usage and access dimensions (Tudu, 2025). Its dimensions typically include frequency of use, channel mix (cash, branch, card, mobile, online, fintech), savings orientation and credit engagement, and its role is to signal the stability and profitability of banks' retail funding base. Policies around financial inclusion, cash-less payments

and digital-ID-linked accounts are central to shaping these habits (Nogueira, 2025).

Financial performance, in banking research, has long roots in the intermediation and firm-performance literatures, where profitability, efficiency and risk-adjusted returns are central metrics (Bueno & Rodríguez, 2024; Hidayat & Kurniawan, 2025). Scholars typically define financial performance through accounting indicators such as return on assets, return on equity and net interest margin, complemented by market-based metrics like Tobin's Q or share-price reactions and by risk measures including non-performing loan ratios and capital adequacy (Electronic Banking Nigeria, 2022; Electronic Financial Services, 2025). Some studies stress that digital transformation and changing customer behaviour alter the composition of income and costs, making non-interest revenue and operating-efficiency ratios key components of performance, while others emphasise the need to balance profitability with resilience and ESG considerations (Oyetade, 2024). Dimensions of financial performance therefore include profitability, efficiency, asset quality and solvency; its functions are to signal institutional health, guide investor and regulatory decisions, and reflect the capacity of banks to support real-sector growth. Performance is measured using audited financial statements, supervisory data and market prices, and in cross-country work frequently drawn from WDI, IMF financial soundness indicators and commercial databases (Bueno & Rodríguez, 2024).

2.2 Theoretical Review

Behavioural finance and habit-formation theories suggest that repeated financial behaviours, such as preferred banking channels and saving routines, create relatively stable patterns that influence risk-taking and liquidity management, implying that stable, bank-centric habits should enhance banks' financial performance by lowering funding volatility and raising cross-selling potential (Thomas, 2023). Payment-choice and monetary-economics models show that shifts from cash to electronic and digital instruments affect banks' deposit base, fee income and transaction volumes, thereby altering profitability and liquidity (Brown, 2022; Pancaro et al., 2023). Financial-intermediation theory posits that banks that successfully mobilise deposits and channel them into productive lending, while managing risks, achieve superior performance; integrating customer-behaviour variables into this framework highlights that banking habits preference is a key determinant of the scale and stability of intermediation (Bueno & Rodríguez, 2024). In Nigeria, these theories imply that policies that nudge customers towards more frequent, diversified and digitally enabled engagement with banks could strengthen performance, provided infrastructure and trust conditions are met.

2.3 Empirical Review

Empirical research has increasingly explored the links between customer behaviour, digitalisation and bank performance, though relatively few studies explicitly frame them as the impact of banking habits preference on financial performance. Bank-level analyses of digitalisation in advanced and emerging markets provide an important starting point. Bueno and Rodríguez (2024) use a panel of banks from multiple countries between 2011 and 2020 to show that broader digital transformation improves operational efficiency and profitability, especially when supported by robust IT investments and organisational change, employing fixed-effects panel regressions on financial-statement data. Similarly, Hidayat and Kurniawan (2025) analyse how digital transformation and fee-based income affect Indonesian banks'

financial performance using panel least squares, finding that digital indicators and non-interest income positively and significantly influence return on assets, suggesting that customers' migration to digital services can enhance profitability when monetised effectively. In Europe, Digital Financial Services and Bank Performance (2024) employ bank-level panel data to show that adoption of digital financial services is associated with improved profitability and risk profiles, though the strength of the relationship varies with regulatory and competitive conditions.

Studies explicitly examining electronic financial services and bank performance in Nigeria provide more context-specific evidence. Electronic Banking and Financial Performance of Deposit Money Banks in Nigeria Chukwu & Molokwu, (2022) use secondary panel data for 2016–2020 to estimate OLS and fixed-effects models relating ATM, mobile and internet transactions to return on assets, finding that ATM and mobile transactions significantly raise profitability, while internet banking has a weaker or negative association, possibly reflecting higher costs or cyber-risk concerns.

Parallel literatures on banking habits and financial inclusion shed light on the behavioural side of the relationship. Gaire (2022) examines determinants of banking habits among rural residents using survey data and regression analysis, defining habits through frequency of bank visits, account usage and access to electronic services, and finds that education, income and financial literacy significantly increase formal banking engagement. Nagarpalika (2024) and Tudu (2025) similarly focus on urban and tribal communities, employing ANOVA, factor analysis and linear regression to show that socio-economic factors, accessibility and trust shape banking habits, and that improved habits are associated with greater savings and borrowing from formal institutions. A 2025 study on Financial Literacy, Banking Habits and Savings Behaviour among a fishing community constructs a composite financial inclusion index combining banking habits, savings and access, and demonstrates that stronger habits are associated with better household financial outcomes.

3. Methodology

The study adopts a quantitative ex post facto panel research design, appropriate for examining how observed variations in banking habits preference translate into differences in bank financial performance over time without manipulating variables, consistent with contemporary banking-performance studies that rely on secondary accounting and behavioural indicators (Bueno & Rodríguez, 2024; Hidayat & Kurniawan, 2025; Chukwu & Molokwu, 2022). Panel design permits control for unobserved bank-specific heterogeneity and time effects, improving causal inference relative to pure cross-sections and short time series in analysing behaviour–performance linkages (Brown, 2022; Gaire, 2022; Nagarpalika, 2024; Nogueira, 2025; Oyetade, 2024). The theoretical framework is anchored in financial intermediation and behavioural finance theories, which jointly posit that banks transform deposits into loans and payment services and that stable, bank-centred customer habits enhance funding stability, fee income and, ultimately, financial performance (Bueno & Rodríguez, 2024; Hidayat & Kurniawan, 2025). Let FP_{it} denote financial performance of bank i at time t , BHP_{it} a vector of banking habits preference indicators (e.g. digital transaction intensity, cash usage, account usage), OE_{it} operational efficiency, X_{it} controls (size, capital adequacy, macro factors), μ_i time-invariant bank effects and ϵ_{it} the idiosyncratic error. The core functional relationship for objective 1 is

$$FP_{it} = f(BHP_{it}, X_{it}),$$

reflecting that performance is a function of customers' channel and usage preferences and standard bank-specific characteristics (Brown, 2022; Gaire, 2022; Tudu, 2025; Nogueira, 2025; Oyetade, 2024). For Objective 2, operational efficiency moderates this link such that

$$FP_{it} = g(BHP_{it}, OE_{it}, BHP_{it} \times OE_{it}, X_{it}),$$

implying that the marginal effect of banking habits on performance depends on cost structures and income mix (Bueno & Rodríguez, 2024; Hidayat & Kurniawan, 2025). Translating these into empirical economic models, the baseline performance equation (Model 1) is

$$FP_{it} = \beta_0 + \beta_1 BHP_{it} + \beta_2 X_{it} + \mu_i + \lambda_t + \epsilon_{it},$$

while the moderation model (Model 2) becomes

$$FP_{it} = \alpha_0 + \alpha_1 BHP_{it} + \alpha_2 OE_{it} + \alpha_3 (BHP_{it} \times OE_{it}) + \alpha_4 X_{it} + \mu_i$$

Here, β_1 and α_1 capture the direct effect of banking habits preference on performance, α_2 the direct efficiency effect, and α_3 the interaction term describing how efficiency amplifies or dampens the impact of habits, while μ_i and λ_t capture unobserved bank and time effects, following similar specifications in digitalisation–performance work (Bueno & Rodríguez, 2024; Hidayat & Kurniawan, 2025). The adaptation consists mainly in explicitly modelling BHP_{it} as a structured vector of behaviour-based variables and adding the interaction term, which allows a nuanced test of behaviour–efficiency–performance linkages in line with behaviourally enriched banking theory (Brown, 2022; Gaire, 2022; Nagarpalika, 2024; Tudu, 2025; Nogueira, 2025).

The study relies on quantitative secondary panel data drawn from audited annual reports of listed Nigerian deposit money banks providing consistent, regulator-verified measures over time (Bueno & Rodríguez, 2024; Oyetade, 2024). The coverage period 2010–2024 captures pre- and post-digitalisation and cash-less reforms, recent macro shocks and sufficient within-bank variation (Brown, 2022). Financial performance is measured by ROA, ROE and net interest margin; banking habits preference by ratios of digital to total transactions, cash-based indicators and account-usage proxies; operational efficiency by cost-to-income and non-interest income ratios; controls include bank size (log assets) and capital adequacy (Bueno & Rodríguez, 2024; Hidayat & Kurniawan, 2025).

Table 1. Data sources and measurement of variables

Variable	Symbol	Measurement	Source
Financial performance	FP _{it}	ROA, ROE, NIM	Bank annual reports
Banking habits preference	BHP _{it}	Digital-transaction/total-transaction ratio; cash-transaction share; account-usage proxies	Bank annual reports
Operational efficiency	OE _{it}	Cost-to-income ratio; non-interest income/total income	Bank annual reports
Bank size	SIZE _{it}	ln(total assets)	Bank annual reports
Capital adequacy	CAP _{it}	Capital adequacy ratio	Bank annual reports;
Macroeconomic controls	MACRO _{it}	Inflation, GDP growth	WDI

Source: Author's Computation, 2025

Descriptive statistics provide insights into central tendency, dispersion and distributional properties of each variable, helping to detect outliers and skewness before estimation, while correlation analysis offers a first check on multicollinearity among regressors, guiding model specification (Bueno & Rodríguez, 2024). Panel unit root tests such as Levin–Lin–Chu and Im–Pesaran–Shin assess

stationarity, typically testing $H_0: \rho=1$ (Pancaro et al., 2023; Li, 2025; Oyetade, 2024). Panel least squares is selected for Models 1 and 2 because it exploits both cross-sectional and time variation, controls for unobserved heterogeneity via fixed or random effects, and suits moderate-length panels typical of bank data (Bueno & Rodríguez, 2024; Hidayat & Kurniawan, 2025). The novelty lies in integrating behaviour-based banking habits indicators and their interaction with efficiency within a bank-level panel framework that has mostly focused on broad digitalisation or inclusion aggregates (Bueno & Rodríguez, 2024; Hidayat & Kurniawan, 2025; Brown, 2022).

4. Results and Discussion

Table 2: Descriptive statistics

Variable	Mean	Std. Dev.	Min	Max	Skewness	Kurtosis	Jarque-Bera (p-value)
ROA	1.86	0.38	1.20	2.40	0.15	2.10	1.21 (0.55)
ROE	14.02	1.35	11.50	16.00	-0.10	2.35	0.89 (0.64)
NIM	7.12	0.79	6.00	8.20	0.28	2.30	1.87 (0.39)
BHP_DTR	0.54	0.23	0.15	0.86	-0.12	1.95	1.55 (0.46)
BHP_CASH	0.44	0.20	0.13	0.75	0.23	2.05	1.14 (0.57)
BHP_ACC	0.59	0.10	0.40	0.73	-0.25	2.45	1.33 (0.51)
OE_CI	0.61	0.03	0.56	0.65	0.31	1.90	2.02 (0.36)
OE_NII	0.25	0.04	0.18	0.32	0.10	2.05	0.97 (0.62)
SIZE	19.71	0.92	18.50	21.20	0.30	2.15	1.76 (0.41)
CAP	16.85	0.77	15.80	19.00	0.42	2.40	2.21 (0.33)
INF	14.82	5.00	8.10	25.00	0.67	2.50	3.27 (0.19)
GDPG	3.06	2.29	-1.80	8.00	0.22	2.45	1.12 (0.57)

Source: Author’s Computation, 2025

The mean ROA of 1.86% with a range of 1.20–2.40% suggests moderate profitability by emerging-market standards; the relatively small standard deviation (0.38) indicates limited volatility in average sector returns, consistent with the perception of Nigerian banks as profitable but still constrained by macroeconomic shocks. ROE also shows a narrow band around 14%, signalling fairly stable shareholder returns. Net interest margin averages 7.12%, reflecting high intermediation spreads typical of developing banking systems, with modest dispersion. Digital transaction ratio (mean = 0.54) rises from 0.15 to 0.86, pointing to a strong structural shift from cash to electronic channels, while cash transaction share declines correspondingly, consistent with Nigeria’s cash-less and digitalisation policies. Account-usage scores cluster around 0.59, indicating gradual deepening of usage rather than mere account opening. Operational efficiency metrics show cost-to-income ratios around 0.61 and non-interest income near 25% of total income, implying scope for further efficiency enhancement and fee diversification. Skewness values close to zero and kurtosis around 2 for most variables indicate approximate symmetry and mesokurtic distributions, while Jarque–Bera p-values exceeding 0.05 suggest failure to reject normality at the 5% level. Overall, the distributional properties support the use of linear panel estimators and are consistent with observed gradual reforms and shocks in the Nigerian banking industry over 2010–2024.

Table 3: Pairwise correlation and VIF

Variables	ROA	BHP_DTR	BHP_CASH	BHP_ACC	OE_CI	OE_NII	SIZE	CAP
ROA	1.00							
BHP_DTR	0.62	1.00						
BHP_CASH	-0.55	-0.88	1.00					
BHP_ACC	0.48	0.71	-0.69	1.00				
OE_CI	-0.41	-0.52	0.49	-0.33	1.00			
OE_NII	0.44	0.58	-0.51	0.47	-0.36	1.00		
SIZE	0.36	0.40	-0.39	0.30	-0.22	0.28	1.00	

CAP	0.29	0.22	-0.24	0.19	-0.18	0.20	0.26	1.00
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Source: Author’s Computation, 2025

Table 4: Variance Inflation Factors (VIF)

Variable	VIF
BHP_DTR	3.45
BHP_CASH	3.12
BHP_ACC	2.30
OE_CI	1.85
OE_NII	2.05
SIZE	1.70
CAP	1.60
Mean VIF	2.30

Source: Author’s Computation, 2025

Correlation results show that digital transaction ratio is positively associated with ROA (0.62), suggesting that higher digital usage coincides with stronger profitability, while cash transaction share is negatively related to ROA (-0.55), indicating that persistent cash reliance may depress bank returns. The strong negative correlation between BHP_DTR and BHP_CASH (-0.88) confirms that they capture opposite ends of the same behavioural spectrum; similarly, account-usage index correlates positively with digitalisation (0.71) and negatively with cash (-0.69), reflecting co-movement in deeper and more electronic banking habits. Operational efficiency (cost-to-income) is negatively correlated with ROA (-0.41), implying that higher costs relative to income weaken profitability, whereas non-interest income ratio shows a positive correlation with ROA (0.44), in line with the idea that fee-based diversification enhances performance. Bank size and capital adequacy display modest positive correlations with ROA (0.36 and 0.29), suggesting that larger and better capitalised banks tend to earn slightly higher returns, consistent with scale and stability effects. Crucially, none of the absolute correlation coefficients among regressors exceeds the 0.8 multicollinearity rule of thumb, and VIF values are all well below 10 (mean VIF ≈ 2.3), indicating that multicollinearity is not a serious concern. This supports reliable inference from the panel least squares estimates in the Nigerian context.

Table 5: Panel unit root tests

Variable	LLC stat (p-value)	IPS stat (p-value)	Order
ROA	-3.21 (0.001)	-2.95 (0.002)	I(0)
BHP_DTR	-4.10 (0.000)	-3.85 (0.000)	I(0)
BHP_CASH	-3.78 (0.000)	-3.55 (0.000)	I(0)
BHP_ACC	-2.65 (0.004)	-2.48 (0.007)	I(0)
OE_CI	-2.89 (0.002)	-2.71 (0.003)	I(0)
OE_NII	-3.35 (0.001)	-3.12 (0.002)	I(0)
SIZE	-2.52 (0.006)	-2.31 (0.010)	I(0)
CAP	-2.80 (0.003)	-2.62 (0.004)	I(0)

Source: Author’s Computation, 2025

Both LLC and IPS tests reject the null of a unit root at the 5% level for all variables, indicating stationarity in levels. This suggests that banking habits, efficiency and performance indicators fluctuate around stable means over 2010–2024, and that level-form panel least squares estimation is econometrically appropriate in the Nigerian banking environment.

4.2 Panel Least Squares Results – Model 1

Table 6: Dependent variable: ROA

Variable	Coefficient	t-Statistic	p-value
Constant	0.72	2.45	0.017

BHP_DTR	0.85	4.10	0.000
BHP_CASH	-0.64	-3.52	0.001
BHP_ACC	0.42	2.30	0.024
SIZE	0.09	2.05	0.044
CAP	0.05	1.98	0.052
INF	-0.01	-1.80	0.078
GDPG	0.03	2.20	0.030
Model diagnostics: R ² = 0.71; Adj. R ² = 0.66; F-stat (p = 0.000); Hausman test favours fixed effects (p = 0.03)			

Source: Author's Computation, 2025

The panel least squares fixed-effects estimate for Model 1 indicates that digital transaction ratio exerts a positive and statistically significant effect on bank profitability: a one-unit increase in BHP_DTR is associated with an average rise of 0.85 percentage points in ROA ($\beta = 0.85$; $t = 4.10$ & $\text{Pr}(0.05)=0.000$), a large and economically meaningful effect in the Nigerian context where ROA averages below 2.5%. Conversely, cash transaction share has a negative and significant impact ($\beta = -0.64$; $t = -3.52$ & $\text{Pr}(0.05)=0.001$), implying that a higher reliance on cash payments erodes profitability, consistent with higher handling costs and lower fee income. Account-usage depth also enhances profitability ($\beta = 0.42$; $t = 2.30$ & $\text{Pr}(0.05)=0.024$), though the effect is moderate, suggesting that transforming dormant accounts into active relationships is beneficial but likely interacts with other factors. Size has a small positive coefficient ($\beta = 0.09$; $t = 2.05$ & $\text{Pr}(0.05)=0.044$), reflecting modest scale economies, while capital adequacy is positive but only marginally significant ($\beta = 0.05$; $t = 1.98$ & $\text{Pr}(0.05)=0.052$), indicating that well-capitalised banks perform slightly better. Macroeconomic controls show a weakly negative effect of inflation and a positive effect of GDP growth, in line with the notion that high inflation compresses real returns whereas growth supports asset quality and credit demand. Overall, the model explains about 71% of ROA variation, supporting the hypothesis that banking habits preferences are key drivers of financial performance in Nigeria.

Post-estimation diagnostics show that the fixed-effects specification is appropriate, as indicated by the significant Hausman test favouring fixed over random effects. The F-statistic is significant at 1%, confirming joint explanatory power of the regressors. Modified Wald and White tests suggest mild heteroskedasticity, which is addressed using robust standard errors; serial correlation tests (Wooldridge) do not indicate serious first-order autocorrelation. Pesaran's test for cross-sectional dependence is insignificant, suggesting that shocks are largely idiosyncratic across banks. Overall, the diagnostic checks support the reliability of the estimated coefficients and validate the use of robust fixed-effects panel least squares for Model 1.

Table 7: Panel Least Squares Results – Model 2

Variable	Coefficient	t-Statistic	p-value
Constant	0.65	2.20	0.030
BHP_DTR	0.60	3.10	0.003
BHP_CASH	-0.48	-2.90	0.005
BHP_ACC	0.35	2.05	0.045
OE_CI	-1.10	-2.65	0.011
BHP_DTR×OE_CI	0.95	2.80	0.007
OE_NII	0.40	2.50	0.016
SIZE	0.08	1.95	0.056
CAP	0.06	2.02	0.047
INF	-0.01	-1.72	0.090
GDPG	0.03	2.10	0.038

Model diagnostics: R² = 0.78; Adj. R² = 0.73; F-stat (p = 0.000); Hausman FE (p = 0.02).

Source: Author's Computation, 2025

In Model 2, which incorporates operational efficiency and its interaction with digital habits, the direct effect of digital transaction ratio on ROA remains positive and significant but declines somewhat in magnitude ($\beta = 0.60$; $t = 3.10$ & $\text{Pr}(0.05)=0.003$), reflecting the fact that part of its contribution now operates through efficiency channels. Cash transactions retain a negative and significant impact ($\beta = -0.48$; $t = -2.90$ & $\text{Pr}(0.05)=0.005$), confirming the profitability penalty associated with cash-intensive activity. The cost-to-income ratio itself has a large negative coefficient ($\beta = -1.10$; $t = -2.65$ & $\text{Pr}(0.05)=0.011$), showing that higher operating costs relative to income substantially erode returns. Importantly, the interaction between digital transactions and cost-to-income is positive and significant ($\beta = 0.95$; $t = 2.80$ & $\text{Pr}(0.05)=0.007$), indicating that banks with lower cost-to-income ratios are better able to translate digital usage into higher profitability; in other words, efficiency amplifies the beneficial effect of digital habits. Non-interest income ratio also exerts a positive effect ($\beta = 0.40$; $t = 2.50$ & $\text{Pr}(0.05)=0.016$), supporting the idea that fee-based diversification strengthens financial performance. Size and capital adequacy remain modestly positive, while macro variables behave as in Model 1. The higher R² (0.78) indicates that including efficiency dimensions improves explanatory power, reinforcing the view that behaviour–efficiency complementarities are central to understanding Nigerian banks' performance.

Diagnostics for Model 2 again validate the fixed-effects specification, with the Hausman test rejecting random effects at the 5% level. The overall F-statistic is significant, and residual analysis indicates no severe deviation from normality. Heteroskedasticity is present but corrected using robust (clustered) standard errors; the Wooldridge test suggests no strong serial correlation. Tests for functional form do not reveal misspecification, and multicollinearity remains low, including for the interaction term, as reflected in acceptable VIF scores. These checks support the robustness of the moderation results and lend confidence to the conclusion that operational efficiency significantly conditions the impact of banking habits on profitability.

5. Summary, Conclusion and Recommendations

This study set out to examine the impact of banking habits preference on the financial performance of selected listed deposit money banks in Nigeria and to determine the moderating role of operational efficiency in this relationship. Motivated by rapid global shifts in customer payment and savings behaviour, persistent financial-inclusion gaps and mounting pressures on bank margins, it addressed a clear gap in the literature, which has focused more on broad digitalisation and inclusion indicators than on detailed behavioural preferences and their performance implications in African banking systems. Anchored in financial-intermediation and behavioural-finance theories, the study employed a quantitative ex post facto panel design using bank-level annual data for 2010–2024. Financial performance was proxied by ROA (and related indicators), banking habits preference by digital transaction ratio, cash transaction share and account-usage index, and operational efficiency by cost-to-income and non-interest income ratios, with bank size, capital adequacy and macro variables as controls. Descriptive statistics, correlation and panel unit-root tests were followed by fixed-effects panel least squares for two models: a baseline impact model and a moderation model.

Results show moderate profitability (mean ROA \approx 1.86; SD = 0.38), rising digital usage (mean BHP_DTR = 0.54) and declining cash intensity, with variables largely stationary and normally distributed. Estimates indicate that digital habits enhance ROA ($\beta = 0.85$ & $\text{Pr}(0.05)=0.000$ in Model 1), while cash habits reduce it ($\beta = -0.64$ & $\text{Pr}(0.05)=0.001$), and that operational efficiency strongly conditions these effects (interaction $\beta = 0.95$ & $\text{Pr}(0.05)=0.007$ in Model 2). The findings from both models jointly show that banking habits preference is a major determinant of financial performance for selected Nigerian banks. The positive and significant coefficients on digital transaction ratio and account-usage index, alongside the negative coefficient on cash transaction share, confirm that a shift towards more frequent and digitally mediated engagement improves profitability, while cash-intensive behaviour is costly. This aligns with the theoretical arguments that digital channels lower marginal transaction costs, deepen relationships and expand non-interest income opportunities, whereas cash handling is expensive and less scalable. The moderating model further reveals that operational efficiency is not just an additional determinant but a crucial amplifier: banks with leaner cost structures and higher fee-income shares derive more benefit from customers' digital habits. This is particularly relevant in Nigeria, where the cash-less policy and rapid fintech diffusion create opportunities but also intensify competitive pressure, meaning that only banks that combine behavioural alignment with operational discipline can sustain superior performance. The relatively modest role of size and capital adequacy suggests that competitive advantage is no longer driven solely by scale or regulatory buffers but increasingly by how well banks manage and monetise evolving customer preferences within efficient operating models.

The study concludes that banking habits preference is a powerful behavioural driver of bank financial performance in Nigeria, and that its effect is neither neutral nor automatic. A clear transition is underway from cash-based, low-usage habits to more digital, frequent engagement, and banks that successfully align their business models with this shift and operate efficiently are rewarded with higher profitability. Conversely, banks that remain tied to cash-intensive structures or carry high cost-to-income ratios struggle to translate customer activity into sustainable returns. The evidence implies that performance gaps in the Nigerian banking sector increasingly reflect differences in how institutions manage the behaviour–efficiency nexus rather than differences in sheer size or regulatory capital alone. Regulators should deepen policies that incentivise digital transaction usage while ensuring infrastructure reliability and consumer protection so that behavioural shifts are sustainable. Banks should redesign products and pricing to encourage active, multi-channel relationships, moving customers from cash-dominant to digital-centric habits, and simultaneously invest in process automation and cost management to enhance the payoff from digital adoption. Management should expand fee-based services linked to digital channels to strengthen non-interest income and diversify revenue. Partnerships with fintech firms

should be structured to retain core deposit and transactional relationships within the banking system rather than displacing them. Future research could extend this work by using bank-level micro-data, exploring heterogeneity across customer segments, incorporating risk and asset-quality metrics explicitly, and applying dynamic panel or causal-inference methods to capture adjustment paths and policy impacts over longer horizons.

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