DIGITAL BANKING ADOPTION AND FINANCIAL PERFORMANCE OF LISTED DEPOSIT MONEY BANKS IN NIGERIA

BY

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Abstract

The study examined the Impact of Digital Banking Adoption and Financial Performance of Listed Deposit Money Banks in Nigeria. The research is a quantitative research and it utilized ex-post facto research design, and innovation diffusion theory was utilized to guide the study. The data were sourced from audited financial statements and investor presentation of deposit money banks in Nigeria listed on Nigerian Exchange Group (NGX) as at 18th October, 2024, the population of the study comprises 10 listed DMBs and 6 of them were selected as sample of the study that have available data spanning from 2019 to 2023. The data were analyzed using Multiple Regression Model (MRM). The study revealed that the coefficient for CSI is -0.541, is signifying that a unit increase in customer satisfaction lead to 0.541decrease in NPM, which contradict finding the of Okereke & Ogechukwu, (2024), though their study was limited to examining only the Complaint Resolution Rate, there as this study expands its scope beyond that. However, the results also reveal that the unit increase in RCM will increase the profitability of the DMBs in Nigeria although this relationship is not statistically significant ($p = 0.412$). The coefficient for RCM is 0.977, indicating a positive effect on NPM, however, this result is not significant with ($p = 0.228$). Both independent variables have high tolerance values (0.898), indicating no multicollinearity issues. Therefore, the study concludes that neither CSI nor RCM are strong predictors of NPM based on outcome the findings. The study recommends that DMBs should enhance operational efficiencies and explore alternative strategies to improve profitability, as customer satisfaction and regulatory compliance alone do not significantly predict financial performance.

Keywords: Deposit Money Banks (DMBs), Net Profit Margin (NPM), Customer Satisfaction Index (CSI) and Regulatory Compliance Metrics (RCM).

Introduction

Digital banking is changing the global financial direction, modifying how transactions are managed. In Nigeria, with its expanding financial sector, digital financial services have speedily advanced in recent years. This growth is driven by increased use of smartphone, better internet access through many of its channels such as; mobile banking, internet banking, E-wallets, POS terminals, **online payment platforms** and regulatory efforts such as Know Your Customer (KYC) Requirements, Anti-Money Laundering (AML) and Counter-Terrorism Financing (CTF), **Data Protection and Privacy Policies**, Two-Factor Authentication (2FA), Cyber Security Measures, Transaction Monitoring and Reporting, compliance to Payment Systems Guidelines is promoting financial inclusion. A significant portion of Nigerians with bank accounts now have access to mobile banking, a notable step toward bridging the financial inclusion gap (Ololade et al., 2024). The performance of deposit money banks signifies how effectively a bank meets its financial objectives within a specific trading period. This is typically revealed in the bank's published audited financial statement of the banks. A comprehensive assessment of a bank's performance should commence by measuring whether it has achieved the targeted objectives by management and shareholders. Each bank may have different objectives and goals: some banks prioritize Exponential growth and long-term expansion, while others may adopt a balanced strategy, aiming to minimize risks and maintain the image of their bank, though with modest returns for shareholders. Traditionally, stock prices and market behavior are regarded as indicators of a firm's performance, though they may not always provide a fully reliable measure (Mboto et al., 2023) Digital banking in Nigerian banks holds a potential for enhancing efficiency, reducing costs, and improving financial performance. An ideal digital infrastructure should be secure, user-friendly, and advanced to attract and

retain customers. Despite these advantages, some prominent challenges such as; cyber threats, outdated systems, and technological constraints hinder full integration and it impact the financial performance of the banks. Cyber risks and infrastructure limitations can result in downturn, transaction errors, and reduced customer trust, ultimately weakening banks' competitiveness and market share (Zik-Rullahi & Adeoye 2024). Failure to address these issues could increase operational costs, undermining digital banking's potential savings. Therefore, overcoming these obstacles is essential to strengthen financial performance and maintain competitive advantage. Despite prior studies identified a positive correlation between digital banking adoption and the financial performance of listed deposit money banks in Nigeria such as: (Adiga & Haruna, 2024; Chukwu & Molokwu, 2022; Ejinkonye et al., 2024; Gaya et al., 2022; Iloaet al., 2024; Mboto et al., 2023; Nnadiet al., 2024; Ololadeet al., 2024; Zik-Rullahi&Adeoye, 2024). However, the findings of Adiga & Haruna (2024) show a negative effect. there is a significant gap in the comprehensive analysis of regulatory and infrastructural challenges affecting FinTech adoption. Moreover, existing studies have underexplored areas such as; customer adoption rates, customer satisfaction index, regulatory compliance metrics, technological infrastructure, economic conditions, digital literacy and competitive factors that could influence this relationship and impact financial performance of the banks. Therefore, this study investigates the impact of digital banking adoption and financial performance of Deposit Money Banks in Nigeria. Addressing these insufficiencies is essential for a deeper understanding of how digital banking adoption impact financial performance of listed deposit money banks in Nigeria, thereby assisting policymakers and banking front-runners in improving service delivery and competitive standing.

Research Objectives

The main objective of the study is to examine impact of Digital Banking Adoption (proxied as Customer **Satisfaction Index and Regulatory Compliance Metrics)** on Financial Performance of Listed Deposit Money Banks in Nigeria (proxied as Net Profit Margin). Specifically, the study aims to achieve the following objectives:

1) Customer Satisfaction Index and financial performance of listed deposit money banks in Nigeria
2) Regulatory Compliance Metrics and financial performance of listed deposit money banks in Nigeria

Measures of Financial Performance

Financial performance in banking refers to the assessment and measurement of a financial institution's comprehensive effectiveness in managing its resources, generating profits, and achieving sustainable growth. It involves the comprehensive evaluation of various financial indicators, including but not limited to profitability, liquidity, solvency, efficiency, and asset quality. Financial performance in banking extends beyond profitability metrics, encompassing risk management, operational efficiency, and the maintenance of a sound financial position (Fatihudin et al., 2018).

1. Net Profit Margin

There are numerous indicators of financial performance utilized by different researchers fit into diverse researches to determine the financial performance of an organisation. This research study employed Net profit margin (NPM) as proxy of the financial performance. Gitman (2012), the net profit margin represents the proportion of sales revenue that remains after subtracting total expenses and costs , including interest, taxes, and preferred stock dividends. Consequently, a high net profit margin signifies favorable performance for a company. This metric is calculated using the following formula:

$$\textit{Net Profit Marain} = \frac{\text{EAT}}{\text{Net Sales}} \text{ X } 100$$

Concept of Digital Banking

Digital banking services refer to as the utilization of the internet, mobile devices, and other electronic platforms as channels for delivering banking services. This incorporates traditional banking functions such as balance inquiries, statement printing, funds transfers, and bill payments, as well as new banking services like electronic bill and online payment, all without the need for customers to visit a physical bank. Actually, digital banking represents the online transformation of traditional banking activities that were previously accessible only within bank branches, including

money deposits. Despite the numerous contributions offered by digital banking, its adoption has not yet met sector expectations. The spread of electronic banking is mainly driven by customer acceptance rather than the offerings provided by service providers (Wadesango & Magaya, 2020). Digital banking technology is transforming the global banking and payment in Nigerian context. It provides a vital solution for millions in emerging markets who possess mobile phones but remain excluded from traditional financial systems. The financial performance of listed deposit money banks in Nigeria is crucial for the generalgrowth of the economy, as these banks serve as the prime financial resource for individuals and institutions. In recent years, banks have introduced innovative products and a comprehensive range of services to enhance their financial performance, which remains their main objective. Digital banking has expanded access to financial services, contributing a diverse array of options tailored to all societal levels. To achieve a strong return on capital, banks must consider the number of customers and the types of banking services they offer. The performance of banks deeply relies on both retail and corporate banking, with retail customers spread across numerous geographical areas, posing challenges in service delivery. Digital banking provides a solution to these challenges, especially since maintaining a traditional brick-and-mortar presence can be costly. Digital banking is central to the strategies of deposit money banks aimed at expanding their networks, reducing costs, competing effectively, and enhancing performance (Ouma & Ndede, 2020).

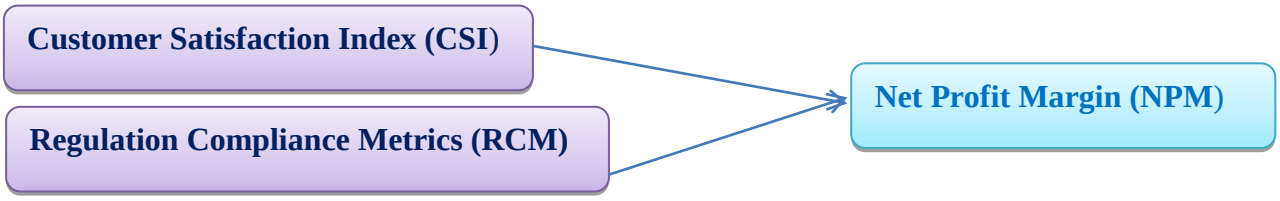
1. Customer Satisfaction Index

Customer satisfaction refers to the results derived from an individual's perceptions, evaluations, and psychological responses to their experience with a product or service. It encompasses both cognitive and affective assessments, comparing actual performance against established expectations. If the performance perceived is less than expected, customers will be dissatisfied; conversely, if the perceived performance exceeds expectations, customer will be satisfied. Musiime & Ramadhan (2011) argue that factors such as customer location, the necessity of maintaining satisfaction, and the capabilities of the bank's primary software significantly influence the decision to adopt electronic banking services. These factors subsequently navigate the usage experience and impact overall satisfaction levels. Moreover, they note that as an intangible service, its appeal varies among customers, and a certain level of service quality must be achieved to ensure satisfaction, which in turn fosters commitment, loyalty, and retention key indicators of customer satisfaction.

2. Regulatory Compliance

Regulatory compliance metrics are quantifiable measures used to assess an organization's compliance to laws, regulations, and industry standards relevant to its operations. These metrics help in identifying compliance risks, tracking the effectiveness of compliance programs, and ensuring accountability within the organization. Common metrics include the number of compliance violations, audit findings, training completion rates, and the time taken to resolve compliance issues. Effective regulatory compliance metrics are essential for mitigating legal risks and maintaining operational integrity, ultimately fostering stakeholder trust (Baker & Jolly 2020).

Figure 1: Conceptual Diagram



Note: Author's compilation (2024)

Theoretical Review

This study is grounded in the innovation diffusion theory (Rogers, 1985), which frames the adoption of digital banking services by focusing on how new ideas and technologies spread within a social system. Mahajan & Peterson (1985) describe innovation as any concept, tool, or practice perceived as new by members of a group, and diffusion

as the process through which this innovation communicates over time within the social structure. The diffusion of innovation theory provides awareness into the mechanisms of technology adoption such as, digital banking through internet and mobile platforms and identifies five key factors influencing adoption rates: relative advantage, compatibility, complexity, trialability, and observability. According to Rogers (1985), the pace at which innovations are adopted depends on how adopters perceive these attributes. In banking, institutions are likely to adopt and implement new digital tools if they perceive a clear benefit, particularly when they possess the technical capacity to support such innovations (Mbotoet al., 2023). This structure allows the research to explore the impact of digital banking adoption, represented by Customer Satisfaction Index, and Regulatory Compliance Metrics, on the financial performance of listed deposit money banks in Nigeria, measured through Net Profit Margin.

Empirical Review

Mustapha (2018) investigates the impact of E-Payment Technology on Bank Performance in Emerging Economies: in Nigeria. While previous research in developed countries has shown positive impacts, this paper introduces three innovative approaches: utilizing the Sortino index for measuring bank performance, linking banks' market risk exposure to electronic payment technologies, and controlling for the "without effects" of these innovations using interaction dummies. Employing time dimensional and panel least square models, the study concludes that bank performance improves post-adoption of electronic payment technologies, recommending that current bank resources, rather than past performances, should be the focus for investors. Thus, the research does not examine contextual factors like regulatory conditions and customer adoption rates, which could influence the relationship between electronic payment systems and bank performance. Chukwu & Molokwu (2022) the study assessed digital banking's impact on the performance of Nigerian commercial banks spinning from 2010 to 2019, employing the Autoregressive Distributed Lag (ARDL) model to analyze the relationship between point-of-sale (POS) transactions, unstructured supplementary service data (USSD) transactions, web banking, and banks' Return on Assets (ROA). Data were sourced from the Central Bank of Nigeria's statistical bulletins and the annual reports of the Nigeria Deposit Insurance Corporation (NDIC). Findings revealed that digital banking positively but insignificantly affects commercial banks' performance. The study recommends establishing secured network systems to reduce transaction failures, collaborating with network providers for a dedicated platform for each digital channel, educating customers on digital banking benefits, and implementing 24/7 cybersecurity teams to protect these channels from cyber threats. However, study underexplore the influence of customer satisfaction and digital literacy on commercial banks' performance, which are critical factors in fully understanding the broader impact of digital banking adoption in Nigeria.

Gaya et al., (2022) examines the relationship between digital banking and the financial performance of Kenya's listed commercial banks. The study utilizes both cross-sectional and longitudinal research designs, the study focused on 11 listed banks, collecting data from annual financial reports from 2019 to 2022, the secondary source of data was employed. Descriptive statistics, correlation, and regression analyses were conducted using Excel. The findings revealed a positive relationship between online banking, agency banking, and mobile banking with financial performance, while ATM banking had a negative impact. The study suggests that banks should enhance their digitalization efforts to boost competitiveness and financial performance. However, study did not address the influence of digital banking on customer satisfaction and non-financial performance metrics, which limits a comprehensive understanding of its overall impact on the competitiveness of commercial banks. Mbotoet al., (2023) explores how electronic banking adoption affects the performance of Nigerian deposit money banks. Indicators of electronic banking include ATMs, Internet banking, POS systems, and mobile banking, with Return on Assets (ROA) as the performance measure. Descriptive research design was utilized, and the study analyzed secondary data from the Central Bank of Nigeria's 2021 Financial Report. The results reveal that these technologies positively influence bank performance, leading to recommendations for banks to adopt innovative technologies to enhance service efficiency. However, the study lacks analysis of customer adoption rates and security concerns, which may also influence bank performance in Nigeria.

Ololade et al., (2024) the study investigates the causal relationships and both short-term and long-term effects of digital financial services on the performance of quoted commercial banks. Utilizing a cross-sectional descriptive survey and ex-post facto research design, the analysis incorporates descriptive statistics and inferential methods such as the dynamic Panel Autoregressive Distributed Lag (PARDL) approach and Panel Granger Causality Test. Findings shows that agency banking strongly predicts variations in Return on Assets (ROA) (p=0.003), while ATM banking has a weaker effect (p=0.08). Internet banking (p=0.049) and mobile banking (p=0.0001) significantly impact ROA. The long-term ARDL model confirms positive influences from agency, ATM, internet, and POS banking, with mobile banking showing limited effect. Thus: research highlights the notable effects of different digital financial services on return on assets (ROA) but does not investigate the underlying factors affecting their efficiency, especially regarding the constrained impact of mobile banking. Zik-Rullahi&Adeoye (2024) investigate the impact of online banking on the financial performance of listed Deposit Money Banks (DMBs) in Nigeria, focusing on Online Web Transactions (WEB), National Electronic Funds Transfer (NEFT), and Mobile Money Operators (MMO). Using regression analysis, the study reveals that WEB negatively affects Profit after-tax growth (PATG), while NEFT positively influences PATG. Similarly, MMO usage correlates with decreased financial growth. These results emphasize the complex nature between online banking and financial performance, contributing a positive awareness for banks and policymakers to enhance digital banking strategies and ensure sustainable growth. The study suggests that improving online web transactions and leveraging NEFT services. Thus, their research underexplored the impact of external variables, such as economic conditions and regulatory compliance, on the connection between online banking elements and financial performance, which restricts the generalizability of their findings.

Nnadi et.al. (2024) examines the impact of digitalizing operations on the performance of Deposit Money Banks in Enugu State, Nigeria. Its objectives included assessing how mobile applications affect customer retention and examining the influence of transactional internet banking on loan acquisition. The study utilizes descriptive survey design, data were collected through questionnaires distributed to 281 entrepreneurs, with 232 responses received. The data retrieved were Analyzed usingLikert Scale and Z-test for hypothesis testing. Findings revealed that mobile applications significantly improve customer retention and that transactional internet banking positively influences loan attraction. The study recommends that banks should enhance mobile application promotion for improved efficiency and customer engagement. However, the research does not provide an in-depth examination of external factors affecting the impacts of digitalization, including economic conditions and competition, which may restrict its wider relevance and understanding. Iloa et al., (2024) examine the essential function of technology in contemporary banking, affecting competition, processes, operations, and customer satisfaction. Their research appraises the effects of adopting emerging technologies on the financial performance of Deposit Money Banks (DMBs) in Nigeria, monthly data from 2012 to 2019 of the banks and employing the Fully Modified Ordinary Least Squares (FMOLS) regression method for analysis. Results reveal that technologies like Web Payment, Mobile Money, Automated Teller Machines, and Point of Sale terminals have a positive long-term impact on bank performance. The study shows the importance of DMBs investing in these technologies to improve performance and service delivery in a competitive digital environment. Thus, the research underexplored the possible obstacles to technology adoption, including infrastructural constraints and regulatory issues, which may considerably affect the financial performance of Deposit Money Banks.

Adiga & Haruna (2024) explored the impact of electronic banking on the performance of deposit money banks in Nigeria, stressing the ongoing debate over its contributions. The research is grounded in innovation diffusion theory; the study utilized secondary data from the Central Bank of Nigeria (CBN) and the Nigeria Inter-Bank Settlement System (NIBSS). Employing the OLS regression model, the analysis examined the relationship between electronic banking components specifically web and mobile transactions and bank performance, measured through loans, advances, and private sector deposits. The results indicated no significant impact of these transactions on performance, leading to the conclusion that electronic banking has not influenced deposit money banks' effectiveness in Nigeria. The study recommended that regulatory authorities promote cashless policies to enhance the adoption of electronic banking, potentially boosting loans and deposits. However, the research does not provide

an in-depth examination of contextual elements influencing the impact of electronic banking, including customer adoption rates and technological infrastructure, which restricts its relevance for policy and practical applications. Ejinkonye et al., (2024) explored the impact of FinTech on financial intermediation in Nigeria from 2009 to 2022. The study shows that banks have not adequately met customer demands for advanced technology platforms, which affects their profitability and deposit growth. To remain competitive, banks must continuously innovatetheir service delivery. The research aimed to appraise the influence of automated teller machine transaction value (ATMVL), point of sale transaction value (POSVL), and internet transfer transaction value (ITVL) on total savings. Results reveal that ATMVL and POSVL significantly affect total savings, while ITVL does not. The study's Recommend that platform security and minimizing downtime to boost customer engagement and trust. Thus, the study underexplored the effects of regulatory and infrastructural obstacles on FinTech adoption, which could hinder banks' capacity to fulfill customer requirements and affect financial intermediation as a whole. Okereke & Ogechukwu, (2024) The study examined the effect of customers' satisfaction costs on the performance of listed deposit money banks in Nigeria. The ex-post facto research design was employed. 14 listed deposit money banks listed on the Nigerian exchange group (NGX) for the period 2013 to 2022 formed the population of the study, the sample size comprised of ten (10) deposit money banks purposively selected. The data was sourced from annual report and accounts. The data were analyzed using multiple regression analysis. The findings reveal that customers satisfaction cost had a significantly effect on financial performance of listed deposit money banks in Nigeria using complaint resolved, complaint received, and unresolved complaint significantly affect PAT of Listed DMBs. Pending complaint cost had no significant effect on PAT on DMBs. The study underpins by Disconfirmation theory.

Methodology

This is quantitative research study it employed an ex-post facto research design, chosen when events have already occurred and data is available. The design is useful for examining cause-and-effect relationships, as it analyzes past events or data to identify potential causal factors without manipulating the variables under investigation. This study employed secondary source of data collected from the audited financial statements and investor presentation of selected banks spanning from 2019 to 2023. This timeframe was chosen due to the significant change of technological landscape in which Nigerian banking Industry is key player. The study's population consists of 10 banks listed on the Nigerian Exchange Group as of December 18th October, 2024, selected based on their classification as Deposit Money Banks by the Central Bank of Nigeria these are Access Bank, Eco Bank, FCMB, Fidelity Bank, GT bank, First bank, Stanbic IBTC, Sterling Bank, UBA and Zenith Bank. The sample is filtered that any bank that merged/acquired or does not have available data within the period of this study were removed from the population of this study these are Access Bank, Fidelity Bank, GT bank, Sterling Bank, UBA and Zenith Bank. This method of sampling is termed as purposive sampling technique which refers to a group of non-probability sampling technique is used when researchers select specific units (in this case, banks) that meet particular criteria for inclusion in the study. Technique of Data Analysis: The descriptive statistics andregression analysis were done using SPSS 10.

Model Specification

The Multiple Regression Model (MRM), as utilized by Zik-Rullahi & Adeoye (2024), was adopted to assess digital banking adoption proxied as; Customer Satisfaction Index (CSI), and Regulatory Compliance Metrics (RCM) in relation to financial performance, proxied by Net Profit Margin (NPM) of deposit money banks in Nigeria. This relationship can be expressed as:

$$NPM_i = \beta_0 + \beta_1 CSI_i + \beta_2 RCM_i + \epsilon_i$$

Where:

NPM = Net profit margin (Dependent variable)
CSI = Customer Satisfaction Index
RCM = Regulatory compliance Metrics
β_0 = Intercept term
β_1 and β_2 = Are the coefficients that measure the effect of CSI and RCM on NPM, respectively.
ϵ = Error term representing the unobserved variables

Variable Measurement:
This research study adopts a variable measurement used by Okereke & Ogechukwu, 2024, this is as follows:

Table 1

S/N	Variables	Acronym	Measurement
Dependent Variable			
	Net Profit Margin	NPM	NPM = Net Profit/Total revenue x100
Independent Variable			
1	**Customer Satisfaction Index**	CSI	CSI=(Customer Growth Rate x 0.30) + (Complaint Resolution Rate x 0.40) + (Digital Service Adoption Rate x 0.30)
2	**Regulatory Compliance Metrics**	RCM	RCM=(Liquidity Ratio x 0.40) + (Capital Adequacy Ratio x 0.40) + (Non-Performing Loan Ratio x 0.20)

Note: Author's compilation (2024)

Data Analysis and Interpretation of Results.

Table 2

Descriptive Statistics

	Mean	Std. Deviation	N
NPM	39.9197	25.91371	30
CSI	54.9903	7.66818	30
RCM	28.3090	6.29115	30

Note: SPSS Output (2024)

The descriptive statistics shows that the Net Profit Margin (NPM) has an average of 39.92 with a high standard deviation of 25.91, which reflect a significant variability in profitability across the 30 observations. Customer Satisfaction Index (CSI) has a higher mean (54.99) and a lower standard deviation (7.67), signifying more consistency in customer satisfaction levels. Regulatory Compliance Metrics (RCM) demonstrates a mean of 28.31 and a moderate standard deviation of 6.29, signifying variation in compliance practices on DMBs in Nigeria. Moreover, the data highlights a larger spread in profitability of the banks, while satisfaction and compliance measures are more stable.

Table 3

Correlations

		NPM	CSI	RCM
Pearson Correlation	NPM	1.000	-.236	.288
	CSI	-.236	1.000	-.320
	RCM	.288	-.320	1.000
Sig. (1-tailed)	NPM	.	.105	.061
	CSI	.105	.	.042
	RCM	.061	.042	.
N	NPM	30	30	30
	CSI	30	30	30
	RCM	30	30	30

Note:SPSS Output (2024)

The Pearson correlation outcomes show a weak negative relationship between NPM and CSI (r = -0.236), indicating that an increase in customer satisfaction may slightly decrease profitability, but this result is not statistically significant (p = 0.105). Equally, NPM has a weak positive correlation with RCM (r = 0.288), indicating that better regulatory compliance may slightly improve profitability, though the relationship is also not significant (p = 0.061). therefore, the correlation between CSI and RCM is weakly negative (r = -0.320, p = 0.042), indicating a potential trade-off between maintaining customer satisfaction and regulatory compliance of DMBs in Nigeria.

Table 4

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.326[a]	.106	.040	25.39043

a. Predictors: (Constant), RCM, CSI

b. Dependent Variable: NPM

Note: SPSS Output (2024)

The regression model reveals the R-value of 0.326, representing a weak relationship between NPM and the predictors (CSI and RCM). The R-square of 0.106 means that only 10.6% of the variability in NPM can be explained by the model, indicating a limited predictive power on the variables. The adjusted R-square is even lower (0.040), entailing that the model's effectiveness decreases when adjusted for the number of predictors variables. The standard error of the estimate is relatively high (25.39), further indicating significant unexplained variability in NPM.

Table 4

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2067.899	2	1033.949	1.604	.220[b]
	Residual	17406.195	27	644.674		
	Total	19474.093	29			

a. Dependent Variable: NPM

b. Predictors: (Constant), RCM, CSI

Note:SPSS Output (2024)

The ANOVA outcomes show that the regression model does not provide a statistically significant fit (F = 1.604, p = 0.220), implying that CSI and RCM, when combined, do not significantly predict NPM. The total sum of squares (19,474.09) is mostly attributed to the residuals (17,406.20), reflecting that the model explains only a small portion of the variance in profitability. This indicates the weak explanatory strength of the model in reflecting the impact of customer satisfaction and compliance on profit margins.

Table 5

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	42.027	48.042		.875	.389	-56.547	140.601					
	CSI	-.541	.649	-.160	-.834	.412	-1.873	.790	-.236	-.158	-.152	.898	1.114
	RCM	.977	.791	.237	1.235	.228	-.646	2.600	.288	.231	.225	.898	1.114

a. Dependent Variable: NPM

Note:SPSS Output (2024)

The coefficient for CSI is -0.541, indicating that a unit increase in customer satisfaction correspond to 0.541 unit decrease in NPM, the results reveals that the unit increase in RCM will increase the profitability of the DMBs in Nigeria although this relationship is not statistically significant (p = 0.412). The coefficient for RCM is 0.977, indicating a positive effect on NPM, however, this result is not significant with (p = 0.228). Both independent variables have high tolerance values (0.898), indicating no multicollinearity issues. Therefore, neither CSI nor RCM are strong predictors of NPM based on these results

Table 5

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	CSI	RCM
1	1	2.951	1.000	.00	.00	.00
	2	.043	8.270	.01	.14	.58
	3	.006	22.313	.99	.86	.42

a. Dependent Variable: NPM

Note: SPSS Output (2024)

The collinearity test shows that there are no serious multicollinearity concerns, with the highest condition index being 22.313. Though this index might slightly indicate potential multicollinearity, the variance proportions of the independent variables do not indicate significant issues. This supports the conclusion that the relationships between the predictors (CSI and RCM) are not significantly strong to cause multicollinearity problems in the model.

Table 6

Residuals Statistics[a]

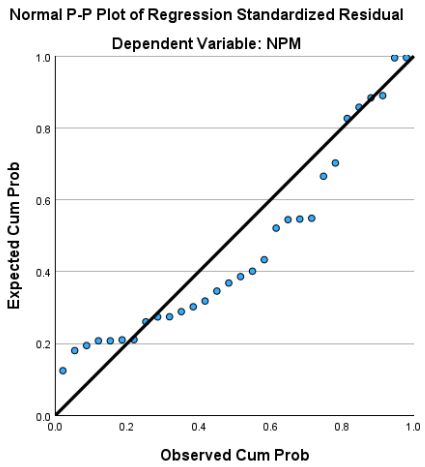
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	22.3695	54.5307	39.9197	8.44434	30
Residual	-29.30903	66.80108	.00000	24.49926	30
Std. Predicted Value	-2.078	1.730	.000	1.000	30
Std. Residual	-1.154	2.631	.000	.965	30

a. Dependent Variable: NPM

Note: SPSS Output (2024)

The residuals statistics reveal significant dispersion, with residuals ranging from -29.31 to 66.80 and a standard deviation of 24.50, indicating a wide gap between observed and predicted NPM values. The mean residual is zero, indicating the absence bias in the prediction errors. The standardized residuals, ranging from -1.154 to 2.631, fall within acceptable limits, implying no significant outliers are distorting the regression results. Despite the lack of deviation, the variability in residuals suggests that the model does not completely explain the relationship between the predictors and NPM.

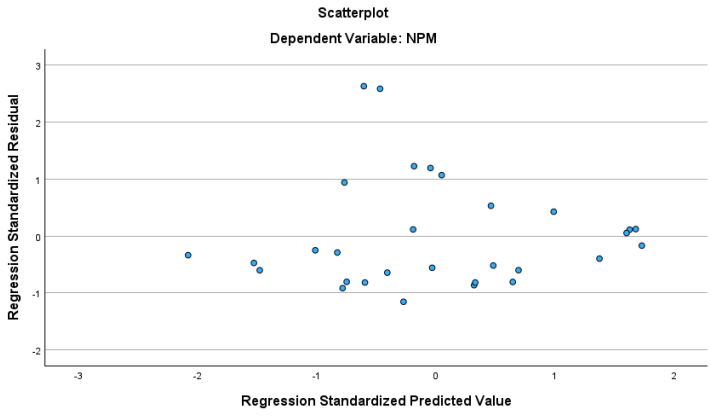
Figure 2



Note: SPSS Output (2024)

The **Normal P-P Plot of Regression Standardized Residuals** for the dependent variable Net Profit Margin (NPM) reveals that the observed residuals predominantly conform to the expected normal distribution, as most of the points normally align closely with the diagonal line. This alignment indicates that the residuals are normally distributed, thereby meeting the assumption of normality in regression analysis. However, slight deviations are visible at the extremes, signifying possible issues with the normality of residuals at the tails. However, the plot indicates that the model's residuals are fairly normal, though deviations may warrant further investigation.

Figure 3



Note: SPSS Output (2024)

The **Normal P-P Plot of Regression Standardized Residuals** for the dependent variable Net Profit Margin (NPM) reveals that the residuals are normally distributed, as most of the points closely conform to the diagonal reference line. This shows that the normality assumption for the regression model is significantly satisfied. However, there are some slight deviations from the line at both ends of the plot, indicating that the residuals may reveal slight non-normality in the tails. Notwithstanding, the pattern supports the validity of the model, with minimal concerns with respect to the normality of residuals

Results Discussion

The descriptive statistics reveal a significant variation in Net Profit Margin (NPM) among the the studied companies, evidence by significant standard deviation of 25.91 in relation to its mean of 39.92. This suggests that some banks enjoy considerable profitability, while others fall significantly, indicating a variation in operational efficiencies. Comparatively, the Customer Satisfaction Index (CSI) revealssuperior consistency with a mean of 54.99 and a lower standard deviation of 7.67, signifying that customer satisfaction levels are relatively consistent among the studied companies. The Regulatory Compliance Metrics (RCM), with a mean of 28.31 and a standard deviation of 6.29, reveals moderate variation in compliance practices, suggesting moderate compliance of the studied companies to regulations than others sectors. The correlation analysis shows a weak negative relationship between NPM and CSI ($r = -0.236$), implying that increased customer satisfaction may result in lower profitability of the banks, though this finding lacks statistical significance. In contrast, RCM has a weak positive relationship with NPM ($r = 0.288$), pointing a potential relationship between regulatory compliance and profitability, even though the relationship is insignificant. However, the negative relationship between CSI and RCM ($r = -0.320$, $p = 0.042$) indicates that customer satisfaction is statistically not related to the profitability of the banks while there is a possible connection between regulatory compliance and profitability of the DMBS even though is statistically insignificant.

Conclusion and Recommendations

The regression analysis reveals a weak relationship between NPM and the predictors, with an R-square of only 0.106, showing that just 10.6% of the variations in NPM can be attributed by customer satisfaction and regulatory compliance. The ANOVA outcomes also confirm the absence of significance in the regression model ($F = 1.604$, $p = 0.220$), indicating that independent variables do not significantly responsible for profitability variations. The coefficients reveal a negative relationship between CSI and NPM (-0.541) implying that an increase in customer satisfaction may negatively affect profitability of the DMBs, which contradict finding the of Okereke&Ogechukwu, (2024), though there study was limited to examining only the Complaint Resolution Rate, there as this study expands its scope beyond that, while RCM shows a positive correlation of (0.977) with NPM, though it relationship is not statistical significant. Collinearitytest indicate no significant multicollinearity issues among independent variables, which confirm the model's reliability. Nevertheless, the residuals statistics shows considerable variations in prediction of the errors, with a standard deviation of 24.50, indicating that the model does not sufficiently capture complexities of the relationship between the independent variables and NPM. The findings recommend that DMBs should enhance operational efficiencies and explore alternative strategies to improve profitability, as customer satisfaction and regulatory compliance alone do not significantly predict financial performance.

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Appendix I

Bank	Year	NPM	CSI	RCM
Access	2019	20.74	49.33	27.96
Access	2020	24.90	43.44	27.50
Access	2021	30.84	52.31	31.00
Access	2022	20.18	54.02	24.26
Access	2023	41.27	58.98	28.88
Fidelity	2019	13.19	55.23	21.98
Fidelity	2020	25.59	58.58	23.16
Fidelity	2021	14.19	57.89	24.78
Fidelity	2022	57.32	58.55	23.66
Fidelity	2023	101.63	56.85	25.30
GT Bank	2019	67.49	57.34	30.04
GT Bank	2020	69.88	53.67	27.20
GT Bank	2021	69.53	53.72	26.03
GT Bank	2022	57.32	51.97	30.64
GT Bank	2023	101.63	53.10	22.05
Sterling	2019	8.33	48.04	22.12
Sterling	2020	10.09	54.99	21.55
Sterling	2021	12.18	60.61	18.65
Sterling	2022	15.03	66.58	21.54
Sterling	2023	13.83	70.18	18.76
UBA	2019	22.01	57.16	32.38
UBA	2020	25.51	54.21	27.62
UBA	2021	25.02	73.31	29.72
UBA	2022	30.56	63.91	39.26
UBA	2023	56.51	50.37	39.82
Zenith	2019	50.26	35.67	32.56
Zenith	2020	54.79	44.84	36.54
Zenith	2021	57.19	46.07	37.88
Zenith	2022	41.45	51.86	38.46
Zenith	2023	59.14	56.96	37.96

Note: Author's Compilation (2024)