Cash Management and its Effect on Financial Performance of Deposit Money Banks in Nigeria

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Abstract
This study examined cash management (CA) and its effect on financial performance (FP) of deposit money banks (DMBs) in Nigeria from the period of 2013 to 2022 (10years). CA proxied with Cash flows from operating activities to total assets (CFOATA), Cash flows from investing activities to total assets (CFIATA), Cash flows from financing activities to total assets (CFFATA), Year ended cash balance to total assets (YECBTA) and Bank Size (BSZ) (independent variables) and FP [proxied with Return on Assets (ROA)]. The Ex-Post Facto research design was used. Data on CA and FP were obtained from the annual reports and accounts of ten (10) DMBs listed in Nigeria Exchange Group that has international presence. The data set was described using descriptive statistics, followed by the correlation analysis was used to ascertain the co-movement of the independent variables in relation to the dependent variable and several diagnostics tests. Since the data are panel series that the unit root test was conducted to ascertain if the data are stationary in order to have accurate regression result followed by single equation co-integration test while the Multiple Regression analysis were employed with the aid of E-VIEW version 9.0. In the light of the findings, it evident that measures of CA used has mixed effects on ROA of DMBs in Nigeria. However, majority of the independent variables such CFFATA, YECBTA and BSZ has significant effects on ROA of DMBs while CFOATA and CFIATA established an insignificant effects on ROA of DMBs in Nigeria. Hence, the study concluded that a CA has significant effects on FP of DMBs in Nigeria. The study recommends that financial regulators should organize conferences and symposia for DMBs in order to enhance their knowledge base on the effective use of CA in the bids to enhanced bank performance.

Key Words: *Cash, Management, Financing, Investing, Operating and Performance*

Introduction

Banks play crucial role as a middleman in channelizing accumulated funds as a lender to different parts of the economy. In any country the banking industry serves as the foundation of the financial system. In raising economies where there is scarce of the financial resources to contribute to economic progress and advancement may be able to get credit from thebanking sector

(Tariq,Usman, Tariq, Rashid, Yin, Memon & Ashfaq, 2021). It is well known inthe literature that CA is crucial to theFP of contemporary bankinginstitutions. In bankers view point, Cash Management (CA) refers to a firm's capacity to devote its available fundseffectively in order to pay operating charges, makeinvestments, and return to common stockholders andmaintaining enough reserves (Ugo & Egbuhuzor, 2022; Akpokerere & Ekane, 2022). Through producingsufficient cash flow, a firm is able to fulfill its ordinaryoperating expenses and avoid incurring debt (Ighoroje & Akpokerere, 2022). The firmgains greater control over its operations as a result. If thebanks are not capable to generate enoughcash to cover its expenses, it may be difficult for it tocarry out its regular operations, including effectivemaintenance of bank services, the purchase of necessarytools and equipment for banking operations. Due toinsufficient CA DMBs cannotprovide loans to its clients as per their requirement, havepoor budgetary control as well as not able to maintain anefficient accounting system (Hoque, 2023; Akpokerere & Obonofiemro, 2022).

CAis an essential component of financial management for banks since it entails the effective management and utilisation of cash resources for the purpose of meeting short-term obligations and maximising returns (Wagdi & Salman, 2022; Ighoroje & Akpokerere, 2022). CA is an integral part of financial management for banks. It is very important for DMBs in Nigeria to have efficient CA due to the dynamic nature of the financial industry and the economic conditions in the country (Peter, Njoku, Ugoani, Nwaorgu & Ukeje, 2020). For DMBs to operate at their highest potential and have the best overall FP, effective CA is very necessary. The CApractises of a bank have a direct impact on the institution's capacity to satisfy the needs of its customers, increase its profitability, and reduce the risks connected with liquidity management. In the Nigerian banking sector, where the significance of efficient CA is well recognised, an in-depth investigation into the influence that it has on the FP of DMBs is required in order to gather sufficient data (Nangih, Ofor & Ven 2020; Akpokerere & Ighoroje, 2022).

DMBs are required to keep an adequate amount of liquid assets in their accounts in order to fulfil customers' requests for withdrawals, complete transactions, and deal with unanticipated situations (Ighoroje & Akpokerere, 2022). Instability in the financial system can be the result of insufficient liquidity, while investment opportunities may be lost due to an abundance of liquidity (Taiwo, Ucheaga, Achugamonu, Adetiloye & Okoye, 2017; Ighoroje & Akpokerere, 2021). The interest rate environment in Nigeria can have an impact on the profitability of banks, and this impact can be influenced by monetary policy decisions, inflation rate decisions, and economic conditions. Banks are able to handle interest rate swings and maximise returns on their assets via the utilisation of efficient cash management (Ighoroje & Akpokerere, 2021). The management of one's available cash is an essential component in risk reduction. Banks can lower the risk of default, improve their credit ratings, and promote overall financial stability if they manage cash flows effectively (Akpokerere & Anuya, 2020). DMBs are required to function within a regulated environment and must adhere to the guidelines that have been established by the Central Bank of Nigeria (CBN) and other regulatory organisations. In order to keep one's financial position in a healthy state, it is very necessary to comply with the regulatory standards pertaining to cash reserves and liquidity ratios (Liman & Mohammed, 2018).

The landscape of CA has been completely revolutionised as a result of the widespread adoption of technology in financial operations, such as internet banking, mobile payments, and electronic fund transfers. Understanding a bank's FP requires a thorough examination of the ways in which the institution makes use of technology to facilitate more effective CA (Hoque,2023). The FP of DMBs can be influenced by a variety of economic factors, including but not limited to GDP growth, inflation rates, and fluctuations in foreign exchange rates (Ighoroje & Akpokerere, 2020). Banks are better able to adjust to shifting macroeconomic conditions when they have efficient cash management (Akpokerere & Okoroyibo, 2020). An investigation into the relationship between effective CAand the economic viability of small and medium-sized businesses in Nigeria would almost certainly involve the examination of historical financial data, regulatory frameworks, and the application of various CA strategies. It is possible that it will also investigate the function of technology, the efficiency of various risk management practises, and the adaptability of financial institutions to shifting economic conditions. In addition to this, the study might shed light on how Nigerian banks strike a balance between maintaining sufficient liquidity and maximising profits within the context of the country's banking landscape (Akpokerere & Oboro, 2019).

Statement of the Problem

The impact of CA on the FP of DMBs in Nigeria is an area of concern in the financial industry. As cash plays a significant role in bank operations, efficient management of cash resources is crucial for enhancing profitability and overall FP. However, there is limited research on the specific factors and strategies surrounding CA in Nigerian DMBs and their impact on FP. The lack of understanding and knowledge regarding the optimal allocation and utilization of cash can lead to ineffective CA practices, which in turn may lead to suboptimal FP for banks.Additionally, with the evolving nature of the banking sector and the increasing adoption of digital banking, the challenges and opportunities associated with CA are continuously changing.The rapidly advancing technology and evolving consumer preferences have necessitated a rethinking of traditional CA approaches, adding further complexity to the issue.Therefore, the need to investigate and understand the impact of CA on the FP of DMBs in Nigeria becomes crucial. It is essential to identify the key factors, strategies, and techniques that facilitate efficient CA and determine their direct and indirect correlation with FP metrics such as liquidity, profitability, and risk management.Addressing these research gaps would provide valuable insights and recommendations for Nigerian DMBs, enabling them to make informed decisions regarding cash management, optimize their FP, and adapt to the changing dynamics of the banking industry.This study aims to fill an existing research gap and contribute to a better understanding of the relationship between CA and FP among DMBs in Nigeria. Specifically, this research will focus on the Nigerian market.

Literature Review

Conceptual Issues

Cash Management (CA)

The concept of CA in deposit money banks refers to the strategic management of cash inflows and outflows to optimize liquidity and ensure efficient cash utilization. It involves effective monitoring, control, and forecasting of cash flows within a bank, with the objective of maintaining

adequate cash reserves while minimizing excess cash holdings. According to Hoque, (2023), CA in deposit money banks typically includes activities such as:

1**. Cash Forecasting:** Banks analyze historical data and market trends to forecast future cash flows, both on a short-term and long-term basis. This helps in determining the amount of cash required to meet operational needs, loan disbursements, withdrawals, and other customer demands.

2. Cash Receipts: Banks manage cash inflows from various sources, such as customer deposits, loan repayments, interest income, and other revenue streams. They ensure that the collection process is efficient, secure, and timely, using modern banking solutions like electronic funds transfers, automated teller machines (ATMs), and online banking.

3. Cash Payments: Banks handle cash outflows to meet various expenses, such as salaries, supplier payments, loan disbursements, and customer withdrawals. Effective CA involves implementing controls and systems to ensure accurate and timely payments, optimizing cash flow allocation, and minimizing the risk of fraud or errors.

4. Liquidity Management: Banks need to maintain sufficient liquidity to meet day-to-day operational requirements and unexpected cash demands. CA strategies focus on striking a balance between holding adequate cash reserves to honor customer withdrawals and managing excess cash to generate returns through investments or lending.

5. Cash Position Monitoring: Regular monitoring of cash positions helps banks assess their liquidity levels, identify potential shortfalls or surpluses, and take appropriate actions to avoid liquidity problems. Banks use cash position reports and cash flow statements to track cash inflows and outflows, and make informed decisions on managing their cash resources.

Overall, CA in DMBs optimizes the use of cash resources, improves operational efficiency, reduces funding costs, and mitigates liquidity risks, ensuring that the bank can meet its financial obligations while maximizing profitability.

Financial Performance (FP)

The FP of DMBs can be assessed by analyzing key financial indicators and ratios. These metrics provide insights into various aspects of a bank's operations, profitability, liquidity, asset quality, capital adequacy, and overall financial health. Here are some important indicators to consider:

1. Net Interest Margin (NIM): NIM measures the profitability of a bank's core lending and investment activities. It calculates the difference between interest earned on loans and investments and the interest paid on deposits and borrowings. A higher NIM indicates better FP (Al Slehat & Al-Nimer, 2017).

2. Return on Assets (ROA): ROA measures a bank's ability to generate profits from its total assets. It shows how efficiently the bank utilizes its assets to generate earnings. Higher ROA indicates better performance (Al Slehat & Al-Nimer, 2017).

3. Return on Equity (ROE): ROE calculates the return earned on shareholder's equity. It shows how effectively the bank uses shareholders' capital to generate profits. Higher ROE indicates better FP (Al-Nimer & Sleihat, 2017).

4. Non-Performing Loan Ratio (NPL): NPL ratio assesses the quality of a bank's loan portfolio by measuring the proportion of non-performing loans to total loans. Lower NPL ratio suggests better asset quality and risk management (Al-Nimer & Sleihat, 2017).

5. Loan-to-Deposit Ratio (LDR): LDR measures the proportion of loans and advances to customer deposits. A moderate LDR indicates a well-balanced loan portfolio and effective liquidity management (Andreou, Philip & Robejsek, 2016).
6. Capital Adequacy Ratio (CAR): CAR indicates the bank's capital strength and ability to absorb financial shocks. It compares the bank's capital to its risk-weighted assets. Higher CAR indicates better stability and solvency (Andreou, Philip & Robejsek, 2016).
7. Efficiency Ratio: Efficiency ratio evaluates a bank's cost structure by comparing operating expenses to revenues. Lower efficiency ratio suggests better cost management and operational efficiency.
8. Liquidity Ratios: Various liquidity ratios, such as the Current Ratio and Loan-to-Asset Ratio, measure a bank's ability to meet short-term obligations and maintain sufficient liquidity.It is important to note that the FP of DMBs can vary based on economic conditions, market competition, regulatory environment, and internal factors. Comparing these indicators over time and benchmarking against industry peers can provide a comprehensive evaluation of a bank's FP.

CA and Bank FP

CAis a crucial aspect of a bank's operations, and it plays a significant role in determining its FP. The relationship between CA and bank FP can be understood through the following points in the words of Bessis (2015):
1. Liquidity Management: Effective CAallows banks to maintain an optimal level of liquidity. By efficiently managing their cash flows, banks can ensure that they have enough cash on hand to meet their daily operational requirements, fulfill customer withdrawals, and settle their obligations promptly. Adequate liquidity management reduces the bank's risk of default and enhances its financial stability.
2. Cost of Funds:CAplays a vital role in managing a bank's cost of funds. The ability to accurately forecast cash flows and efficiently allocate funds helps minimize the cost of borrowing and reliance on expensive sources of funding. By optimizing their cash positions, banks can reduce interest expenses and improve their net interest margin, positively impacting their FP.
3. Capital Efficiency: Effective CAenables banks to deploy their capital efficiently. By managing their cash flows well, banks can fund loans and investments, thereby earning interest income and achieving a higher ROA. Banks can also optimize their capital allocation by identifying low-yield or non-performing assets and reallocating funds to more profitable activities, thereby improving their ROE.
4. Risk Management:CAis closely connected to risk management within a bank. By effectively monitoring and managing cash flows, banks can identify and mitigate liquidity risks, interest rate risks, and operational risks. Ensuring that sufficient cash is available to cover potential losses and maintain regulatory compliance reduces the bank's exposure to financial and reputational risks, strengthening its overall FP.
5. Customer Satisfaction: Efficient CA enhances customer satisfaction, which in turn has a positive impact on the bank's FP. Meeting customer demands for convenient, secure, and timely cash transactions fosters loyalty and attracts new customers. An efficient CA system that minimizes errors, delays, and inconveniences improves the overall customer experience, leading to increased deposits, fee income, and cross-selling opportunities.In summary, CA is a critical

factor in determining a bank's FP. By optimizing cash flows, managing liquidity, minimizing costs, efficiently allocating capital, mitigating risks, and enhancing customer satisfaction, banks can improve profitability, stability, and overall performance.

Theoretical Framework

Trade-off Theory

The trade-off hypothesis suggests that companies identify their ideal cash and availability, which is a measure of the costs and marginal undervaluation of cash holdings. Due to its low cash and cash equivalents as well as the high fundraising expenditures, the company will have to pass up investment possibilities that are critical to the company's growth. The primary benefit of the funds is that the business will still be able to protect itself from the light in the asset liquidation process and the expense of securing outside funding to support its expansion prospects (Bessis, 2015).

Determining the optimal investment in an uncertain environment is the main goal of the assistance for the financial cost of maintenance and the reduction of financial disaster. Its board of directors made the decision, or it may be motivated by the goal to increase shareholder wealth by paying cash dividends, or it may be a result of a desire to maintain the ideal level of cash and the availability of new capital for the banks' expansion.

Baumols Model

A model established by William J. Baumol can be applied to determine the ideal cash holdings in addition to being employed in inventory management. Inventory management and CA are similar, according to Baumols. The ideal cash holdings are determined by balancing the opportunity cost, or the cost of retaining cash, against the transaction cost (i.e., the cost of converting marketable securities into cash, etc.), just as the Economic Order Quantity (EOQ) in inventory management incorporates this trade-off. At the moment where the total cost is lowest, the ideal cash balance is stretched. The appropriate level of cash that will minimise the overall alternative costs and transaction costs while retaining a specific quantity of cash is found using the Baumols model.

Empirical Review

Hoque (2023) explored the effect of CA on FP of DMBs in Bangladesh. Tobin’s Q is the proxy of FP of commercial banks in Bangladesh that alsoexplained variable in current study. Cash flows from operating activities to total assets , cash flows from investingactivities to total assets, cash flows from financing activities to total assets positively and year ended cash balanceto total assets are explanatory variables which are the proxy of CA of DMBs inBangladesh. Besides this, size, age and leverage of DMBs are also incorporated as control variables inpresent study. E-views 12 is used for analyzing the collected data. Result outline that value of the R Square (R2) is0.3983 which means explanatory variables able to explain 39.83% variation of commercial banks performance(Tobin’s Q) in Bangladesh. Cash flows from financing activities to total assets positively (0.045964) and year endedcash balance to total assets (0.361641) negatively impact on DMBsperformance in Bangladesh to whatend are empirically noteworthy at 5% and 1% level successively. So researcher suggests that commercial banks inBangladesh should prudently manage cash for uplifting their FP.

Ugo and Egbuhuzor (2022) conduct research to investigate the connection that exists between the FP of Nigerian DMBs and their management of cash. Researchers demonstrated that financing activities cash flows had a significantly positive influence on the FP of Nigerian banks, which was found to be statistically significant. The outcomes of the study suggested that cash hoarding had a significant and detrimental effect on the FP of a representative sample of Nigerian banks.

An examination by Nangih et al. (2020) into the connection between CA and FP is being conducted on a number of oil and gas businesses that are traded on the Nigerian Stock Exchange. The companies in question are listed there. While cash flows from operating in conjunction with investing activities indicated an unfavourable and inconsequential link with profitability, cash flows from financing operations demonstrated an indisputable and significant relationship with firm performance in the oil and gas industry.

According to Liman and Mohammed (2018), listed corporations in Nigeria from 2005 to 2014 had their corporate FP tracked over a ten-year period regarding operating cash flow. This tracking occurred over the period of time from 2005 to 2014. The use of regression analysis, correlation analysis, and descriptive statistics allowed for the determination of the variance in FP that was caused by the operating cash flow variable. Because of the time series and cross-sectional aspects of the data, panel data regression was an absolutely necessary analysis method. When FP is measured by ROA, the results showed a positive and insignificant relationship between Cash Flow from Operating Activities (CFO) and FP. On the other hand, when FP is measured by ROE for listed aggregate enterprises in Nigeria, optimistic and significant relationships were found. This was the case for all of the enterprises.

Alslehat and AINimer (2017) investigated the ways in which Jordanian insurance companies managed their cash flow and how efficiently they used their financial resources. There were twenty-three different insurance companies operating in Jordan as per the data collected between the years 2009 and 2013. According to the findings of a study, the FP of insurance businesses in Jordan, as measured by return on assets, was positively impacted by the net cash flows generated by investment and operational operations.

Research Methodology

The Ex-Post Facto research design was used. Ex-Post Facto research design aids in answering the who, what, when, where, and how questions linked with a certain study problem. The ex-post facto research design is used to acquire information on the current state of a phenomenon and to define ‘what exists' in terms of variables or conditions in a setting that is specifically relevant to the issue under investigation. The plan called for gathering secondary data from yearly reports and accounts of a total of ten banks in Nigeria's banking sector, which would then be analyzed with appropriate tools. The study made use of judgemental sampling technique because in drawing the sample of 10 banks out of the 18 banks in the banking industry listed in the Nigeria exchange group. It was done purposively by the researcher due to the availability of annual reports and accounts of the 10 banks in the banking industry.The complete set of yearly reports and financial statements for all ten banks listed in the Nigeria Exchange Group for the fiscal years 2013 through 2022.

This study used the statistical method of data analysis. This study used the quantitative method of data analysis. To ascertain the type of link between the independent and dependent variables, descriptive statistics and correlation analysis were employed. The study conducts a unit roots test for the time series data in order to ascertain if they are stationary or not. It also conducted several diagnostics test before the unit root test and followed by single equation co-integration test. Multiple regression model specified was applied is one that seeks to explain change or variation in the value of the dependent variable on the basis of changes in other variables known as the independent or explanatory variables using a longitudinal data with the aid of E-view 90. The model assumes that the dependent variable is a linear function of the independent variables. The model which specifies that CA proxied with Cash flows from operating activities to total assets (CFOATA), Cash flows from investing activities to total assets (CFIATA), Cash flows from financing activities to total assets (CFFATA), Year ended cash balance to total assets (YECBTA) and Bank Size (BSZ) (independent variables) and FP [proxied with Return on Assets (ROA)] (dependent variable) of DMBs in the Nigeria, formulated as follows;

ROA = f (CFOATA, CFIATA, CFFATA, YECBTA, BSZ)
$ROA = \beta_0 + \beta_1 CFOATA + \beta_2 CFIATA + \beta_3 CFFATA + \beta_4 YECBTA + \beta_5 BSZ + E$

Where; E = Error Term, β_0 = Intercept , β_1–β_5 = Coefficient of the Independent Variables and the a priori expectation is β_1, β_2, β_3, β_4, β_5, is greater than 0.

Results and Discussion

Under this sub-heading, various analyses was conducted, this was done below;

Table 4.1: Descriptive Statistics

	ROA	CFOATA	CFIATA	CFFATA	YECBTA	BSZ
Mean	0.027559	7.504177	5.539062	5.886061	6.841691	7.648276
Median	0.018063	6.881204	5.589439	6.163986	6.311163	8.119012
Maximum	0.540292	9.943955	8.015449	8.312030	9.611123	9.985011
Minimum	-0.091003	5.205929	2.540329	3.449633	3.439648	5.430754
Std. Dev.	0.058280	1.337333	1.085310	1.427222	1.762747	1.359364
Skewness	1.847788	0.321407	-0.235708	0.171399	-0.190250	-0.003628
Kurtosis	3.159485	1.474755	2.746533	1.725030	2.055126	1.533278
Jarque-Bera	15087.19	11.41493	1.133976	7.117490	4.323194	8.963859
Probability	0.000000	0.003321	0.567231	0.028475	0.115141	0.011312
Sum	2.755920	750.4177	526.2109	576.8340	684.1691	764.8276
Sum Sq. Dev.	0.336258	177.0576	110.7223	197.5855	307.6205	182.9393
Observations	100	100	100	100	100	100

Source: EVIEW, 9.0 Outputs, 2024.

Table 4.1 above is the presentation of the descriptive statistics. The mean value for the ROA recorded a mean value of 0.0276 with a Std. Dev. of 0.0583. Also,CFOATA, recorded a mean of 7.5042 and Std. Dev of 1.3373, CFIATA recorded that a mean of 5.5391 with a Std. Dev of 1.0853, CFFATA recorded that a mean of 5.8861 with a Std. Dev. of 1.4272, YECBTA recorded an average value of 6.8417 with a Std. Dev. of 1.7627 and BSZ recorded an average of 7.6483 and standard deviation of 1.3594. Since the Std. Dev. for all the variables are greater than respectively means, it shows that the data are widely dispersed.The normal distribution has a kurtosis of three, which indicates that the distribution has neither fat nor thin tails. Consequently, if an observed distribution has a kurtosis greater than three, the distribution has heavy tails when compared to the normal distribution. Since all the kurtosis coefficients in Table 4.1 are lesser than 3, this shows that ROA, CFOATA, CFIATA, CFFATA, YECBTA and BSZ have thin tails when compared to the normal distribution.

Table 4.2: Correlation Matrix

	ROA	CFOATA	CFIATA	CFFATA	YECBTA	BSZ
ROA	1.000000					
CFOATA	0.053653	1.000000				
CFIATA	0.130604	0.629736	1.000000			
CFFATA	0.267821	0.782305	0.721393	1.000000		
YECBTA	0.021352	0.879760	0.512504	0.598466	1.000000	
BSZ	0.080318	0.829980	0.705319	0.954386	0.669963	1.000000

Source: EVIEW, 9.0 Outputs, 2024.

The correlation test is presented in Table 4.2 and it shows the absence of multi-co linearity among the variables since the correlation values are less than 0.7. Furthermore, the result shows the explanatory variables namely; CFOATA, CFIATA, CFFATA, YECBTA and BSZ has positive strong correlation with ROA of DMBs in Nigeria.

Table 4.3: Variance Inflation Factors Multicollinearity Test

Variance Inflation Factors
Date: 03/22/24 Time: 06:12
Sample: 1 100
Included observations: 100

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
CFOATA	0.000109	286.0713	8.450637
CFIATA	3.97E-05	57.90290	2.137351
CFFATA	0.000140	53.21557	2.155640
YECBTA	3.52E-05	78.66202	4.914464
BSZ	0.000174	73.46652	4.114347
C	0.001508	69.62877	NA

Source: EVIEW, 9.0 Outputs, 2024.

Since the data for the study are panel series, the multicollinearity test was conducted to ascertain if the data contained multicollinearity, this is presented in Table 4.3 above. When two or more independent variables in regression models exhibit strong correlations, the data set is said to be multicollinear. The variance inflation factor (VIF) was calculated as indicated in Table 4.3 to guarantee the validity of the study's findings. In addition, the Centred Variance Inflation Factor (CVIF) figures for CFOATA, CFIATA, CFFATA, YECBTA, and BSZ, respectively, consistently fall within 8.4506, 2.1374, 2.1556, 4.9145, and 4.1143 for all independent variables. This indicates the absence of multicollinearity problems among the variables under investigation because the cut off value of VIF is 10. Values of VIF that exceed 10 are often regarded as indicating multicollinearity.

Table 4.4a: Breusch-Godfrey Serial Correlation LM Test

F-statistic	0.154934	Prob. F(2,85)	0.8567
Obs*R-squared	0.337800	Prob. Chi-Square(2)	0.8446

Source: E-VIEW, 9.0 Outputs, 2024.

Prior to estimating the models, residuals of the variables were ascertained to check for the presence of serial correlation. This was done using the serial correlation LM test. The serial correlation LM test in Table 4.4a details that there is no element of serial correlation in the models owing to the fact that the p-values of the f-statistics are insignificant at 5% level of significance.

Table 4.4b: Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	2.928039	Prob. F(5,87)	0.01172
Obs*R-squared	13.39567	Prob. Chi-Square(5)	0.2199
Scaled explained SS	322.5687	Prob. Chi-Square(5)	0.2130

Source: E-VIEW, 9.0 Outputs, 2024.

The situation in which the variability of a variable is unequal across the range of values of a second variable that predicts it leads to problem of heteroskedasticity. To ensure that there is homoscedasticity in the model estimation, the heteroskedasticity test via the Breusch-Pagan-Godfrey was performed. With the result there is no problem of heteroskedasticity in the models as the p-values of the f-statistics are insignificant at 5% significance level.

Table 4.4c: Ramsey RESET Test t

	Value	df	Probability
t-statistic	14.45117	86	0.1023
F-statistic	208.8362	(1, 86)	0.1243
Likelihood ratio	114.5828	1	0.0912

Source: E-VIEW, 9.0 Outputs, 2024

Table 4.4c indicates that the model is homoskendastic since the probability values of three parameters are greater than 0.05 level of significance. Ramsey test result reveals that our model is correctly specified and is stable for regression analysis.

Table 4.5: Augmented Dickey-Fuller (ADF) Unit Root Test

Test Variables	ADF Test Statistic Value	Mackinnon Critical Value @ 5%	Order of Integration	P-Value	Decision
@Level					
ROA	-2.874026	-5.890926	1(0)	0.1834	Non-Stationary
CFOATA	-2.402727	-2.890926	1(0)	0.1436	Non-Stationary
CFIATA	-2.924429	-3.893589	1(0)	0.0728	Non-Stationary
CFFATA	-2.086065	-2.893230	1(0)	0.2508	Non-Stationary
YECBTA	-2.507694	-2.890926	1(0)	0.1167	Non-Stationary
BSZ	-2.030268	-2.890926	1(0)	0.2736	Non-Stationary
@1st Difference					
ROA	-9.779968	-2.891871	1(1)	0.0000	Stationary
CFOATA	-9.758965	-2.891234		0.0000	Stationary
CFIATA	-11.41635	-2.895109	1(1)	0.0001	Stationary
CFFATA	-11.58756	-2.893230	1(1)	0.0001	Stationary
YECBTA	-9.894824	-2.891234	1(1)	0.0000	Stationary
BSZ	-9.111480	-2.891234	1(1)	0.0000	Stationary

Source: E-VIEW, 9.0 Outputs, 2024.

The summary of the ADF unit root test output in Table 4.5, revealed that all the variables under investigation i.e. ROA, CFOATA, CFIATA, CFFATA, YECBTA and BSZ are not stationary at level but contain unit root test at their first difference 1(1). Evidence of this could be seen from the value of their respective ADF statistics which is more than the critical value at 5%. Moreover, additional evidence of stationary series could also be seen from the p-value for all variables which

is less than 5% level of significance greater than 95% confidence level. They all attained stationarity at first difference i.e. at order one, hence, the data are suitable for regression.

Table 4.6: Single Equation Co-integration Test

Dependent	tau-statistic	Prob.*	z-statistic	Prob.*
ROA	-8.802934	0.0000	-83.17042	0.0000
CFOATA	-4.060952	0.0278	-27.21967	0.0220
CFIATA	-2.026196	0.0444	-8.715154	0.0450
CFFATA	-5.499064	0.0113	-46.84065	0.0068
YECBTA	-3.825326	0.0462	-24.42530	0.0313
BSZ	-4.478571	0.0208	-34.95823	0.0183

Source: E-VIEW, 9.0 Outputs, 2024.

The result from Table 4.6, the single equation co-integration test indicates a probability values that are less than 0.05 (5%) level of significant, which implies that the variable are co-integrated and suitable for multiple regression

Table 4.7: Multiple Regression Analysis

Dependent Variable: ROA
Method: Least Squares
Date: 03/22/24 Time: 06:10
Sample: 1 100
Included observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.184110	0.038835	4.740812	0.0000
CFOATA	-0.009083	0.010459	-0.868407	0.3876
CFIATA	-0.003793	0.006300	-0.602008	0.5487
CFFATA	0.093419	0.011815	7.907112	0.0000
YECBTA	0.007758	0.002930	2.647782	0.0142
BSZ	0.087523	0.013179	6.641086	0.0000

R-squared	0.429834	Mean dependent var	0.030913
Adjusted R-squared	0.397066	S.D. dependent var	0.057801
S.E. of regression	0.044882	Akaike info criterion	-3.307218
Sum squared resid	0.175253	Schwarz criterion	-3.143824
Log likelihood	159.7856	Hannan-Quinn criter.	-3.241244
F-statistic	13.11744	Durbin-Watson stat	1.950894
Prob(F-statistic)	0.000000		

Source: EVIEW, 9.0 Outputs, 2024.

Table 4.7 displays the results, the coefficient of CFOATA is -0.0091, t-value is -0.8684, and the corresponding p-value (sig. value) is 0.3876. This implies that ROA is negatively and negligibly

impacted by CFOATA. The null hypothesis, which states that CFOATA has no discernible impact on the return on assets (ROA) of DMBs in Nigeria, is accepted and the alternate hypothesis is rejected because this link is not significant, as indicated by the p-value of 0.3876, which is greater than the 0.05 (5%) level of significance. The correlation between CFOATA and ROA is -0.0091, suggesting a negative trend for CFOATA. In Nigeria, a one percent (1%) change in CFOATA would result in a 0.91% drop in DMB ROA. While this result conflicts with that of Ugo and Egbuhuzor (2022), it is consistent with the findings of Hoque (2023).

Additionally, the findings in Table 4.7 show a p-value (sig. value) of 0.5487 and a CFIATA coefficient of -0.00038 with a t-value of -0.6020. This implies that ROA is negatively and negligibly impacted by CFIATA. Given that the p-value of 0.5487 is more than the 0.05 (5%) level of significance, this link is not significant. As a result, the alternate hypothesis is rejected and the null hypothesis, which states that CFIATA has no significant impact on DMB ROA, is accepted. With a value of 0.0268, CFIATA appears to be trending positively with ROA. A one percent (1%) change in CFIATA will result in a 0.038% drop in DMB ROA in Nigeria. The results conflict with those of Hoque (2023) but are in line with those of Ugo and Egbuhuzor (2022).

Furthermore, the results in Table 4.6 show that the corresponding p-value (sig. value) is 0.0000 and the coefficient of CFFATA is 0.0934 with a t-value of 7.9071. This implies that CFFATA significantly and favourably affect ROA. The null hypothesis, which states that CFFATA has no significant effect on ROA of DMBs, is rejected, while the alternate hypothesis is accepted, because this association is significant and the p-value of 0.0000 is less than 0.05 (5%) level significance. With a value of 0.0934, CFFATA appears to be trending positively in relation to ROA. In Nigeria, a one percent (1%) change in CFFATA would result in a 9.34% increase in DMB ROA. The results conflict with those of Ugo and Egbuhuzor (2022) but are consistent with those of Hoque (2023) and Nangih et al. (2020).

In a similar vein, Table 4.6's findings show that the YECBTA coefficient is 0.0078, t-value is 2.6478, and the corresponding p-value (sig. value) is 0.0142. This implies that YECBTA significantly and favourably affect ROA. The null hypothesis, which states that YECBTA has no significant influence on ROA of DMBs, is rejected while the alternate hypothesis is accepted because this association is significant and the p-value of 0.0142 is less than the 0.05 (5%) threshold significance. With a value of 0.0078, YECBTA appears to be trending positively in relation to ROA. The ROA of DMBs in Nigeria would rise by 0.78% for every 1% shift in the YECBTA. The results conflict with those of Hoque (2023) but are in line with those of Ugo and Egbuhuzor (2022) and Nangih et al. (2020).

Lastly, Table 4.6 displays the results, which include a BSZ coefficient of 0.0875, a t-value of 6.6411, and a corresponding p-value (sig. value) of 0.0000. This implies that BSZ significantly and favourably affect ROA. The null hypothesis, which states that BSZ has no significant effect on ROA of DMBs, is rejected, and the alternative hypothesis is accepted, as this association is significant and the p-value of 0.0000 is less than 0.05 (5%) level significance. The correlation between BS and ROA is positive, as indicated by the coefficient of BSZ of 0.0875. In Nigeria, a 1% change in the BSZ would result in an 8.75% increase in the ROA of DMBs. The results conflict

with those of Ugo and Egbuhuzor (2022) but are consistent with those of Hoque (2023) and Nangih et al. (2020).

Conclusion

DMBs are blood of financial system of a developing country like Nigeria. Nigeria economy will collapse due to bankruptcy ofDMBs. If DMBs unable to treattheir CA prudently they become insolvent within short span of time. So CA is vital issues of sustainably enhance the FP of DMBs in Nigeria. Researcher undertakes present study to show the impact of CA on FP of selectedDMBs in Nigeria. In the light of the findings, it evident that measures of CA used has mixed effects on ROA of DMBs in Nigeria. However, majority of the independent variables such CFFATA, YECBTA and BSZ has significant effects on ROA of DMBs while CFOATA and CFIATA established an insignificant effects on ROA of DMBs in Nigeria. Hence, the study concluded that a CA has significant effects on FP of DMBs in Nigeria.

Recommendations

In line with the objectives and findings, we recommend that:

1. DMBs in Nigeria should minimize their CFOATA and CFIATA, since it has detrimental effect on their ROA.
2. Financial regulators should organize conferences and symposia for DMBs in order to enhance their knowledge base on the effective use of CA in the bids to enhanced bank performance.
3. The study recommends that DMBs should increase their CFFATA, YECBTA and BSZ to better improve their profit.
4. Finally, the banks should increase their size in term of total assets, to enable them to absorbed risk and increase their profitability level.

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