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Determinants of financial distress in Nigerian deposit money banks: A panel modelling approach

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ABSTRACT

This study examines the determinants of financial distress of listed deposit money banks (DMBs) in Nigeria from 2010 to 2022. Founded on the financial ratio theory and integrating behavioral managerial traits within the framework, the research employs a quantitative approach, using panel data from eight publicly listed DMBs and applying the panel ordinary least squares regression (Panel OLS) and robust standard errors and Fully Modified Ordinary Least Squares (FMOLS) to capture long-run dynamics. Findings reveal that capital adequacy, exchange rate, and inflation rate significantly increase the likelihood of financial distress, while bank size significantly reduces financial distress due to economies of scale. The FMOLS estimates corroborate the significance of exchange rate and inflation rates while highlighting asset quality and deposit structure as key long-term determinants. GDP and liquidity ratio remain insignificant, and managerial overconfidence exerts no significant impact. The findings pinpoint that macroeconomic and firm-specific factors drive financial distress in DMBs. Therefore, policymakers are advised to strengthen capital regulation, enforce thorough asset quality controls, and implement macroeconomic policies that support growth in the financial sector. This research contributes to the body of knowledge on financial stability in Sub-Saharan Africa, offering insights for mitigating distress in emerging financial markets.

Contribution/ Originality: This study contributes to the literature by integrating bank-specific, macroeconomic, and managerial factors to determine financial distress in Nigerian DMBs, offering key insights into emerging economies' vulnerabilities. Furthermore, it extends financial ratio theory by incorporating behavioral dimensions in the research model, while providing evidence-based directives for governments, regulators, policymakers, and corporate management to strengthen resilience and ensure financial stability.

1. INTRODUCTION

Globally, firms, scholars, regulators, and investors are concerned about the financial health of corporate organizations, as the primary goal of a firm is profit maximization (Kandpal, Jaswal, Santibanez Gonzalez, & Agarwal, 2024). However, many firms fail to meet such objectives due to financial difficulties. Worldwide, economic downturns, stock market volatility, and rising national debts have increased banks' vulnerability and affected corporate sustainability (Leung, Ko, & Chen, 2025). In Africa, these issues are worsened by weak governance structures, volatile capital markets, and limited access to long-term finance (Haile, Jayamohan, & Mulugeta, 2025). Additionally, episodes of financial distress continue to weaken the intermediation capacity of deposit money banks in Nigeria, as well as in other emerging markets.

The Nigerian financial sector exemplifies this paradox. Despite being the continent's second-largest economy and having the second-largest banking assets, the sector has experienced recurrent distress cycles (evidenced by over 10 DMB failures between 2005 and 2015) and a sustained rise in non-performing loans over the past decade (Bob-Manuel, 2024). Furthermore, in other African countries, such as Ethiopia, companies like Holland Car and Access Real Estate have encountered financial difficulties. Nonetheless, a resilient financial system is vital for macroeconomic stability because it allocates limited financial resources from surplus to deficit areas of the economy, cushions economic shocks, and fosters public confidence (Metwally, Yasser, Ahmed, & Ali, 2025).

Despite efforts by researchers, policymakers, and the government in this regard, certain ambiguities remain. Existing empirical studies identify several factors associated with distress: macroeconomic shocks (such as inflation and exchange rates), policy interventions, and firm-level determinants of financial distress both in foreign (Kebede, Tesfaye, & Erana, 2024; Umam & Yusuf, 2024) and local contexts (Aniemeke, 2024; Appah & Duoduo, 2024). However, notable gaps persist. First, previous studies rarely combine bank-specific, macroeconomic, and managerial behavioral factors within a single empirical framework, which limits our understanding of their combined impact on financial distress.

Second, most empirical evidence on emerging markets predates the macro-financial instability after 2020, caused by the COVID-19 pandemic, oil-price fluctuations, and tightening global liquidity, which may have altered the dynamics of financial distress. Third, behavioral finance and pragmatic theories, such as the upper echelon theory, have introduced new behavioral dimensions, including managerial overconfidence, which is now recognized as a significant amplifier of corporate risk. However, behavioral factors are notably underrepresented in Nigerian-based research and other key emerging markets. Addressing these gaps is vital because unresolved bank distress restricts credit supply, deters foreign direct investment, and ultimately hinders Nigeria's progress toward achieving the Sustainable Development Goals (SDGs) by 2030.

Based on financial ratio theory, this study examines the combined impact of capital adequacy, exchange rate, asset quality, deposit structure, bank size, gross domestic product, inflation rate, liquidity, and managerial overconfidence on the financial distress of deposit money banks in Nigeria. Using a panel methodology that accounts for cross-sectional dependence and structural breaks, this research makes three main contributions. First, it offers the first post-pandemic, multi-layered assessment of distress determinants; second, it measures the explanatory power of managerial behavioral traits alongside traditional risk indicators; and third, it provides evidence-based policy recommendations for regulators and bank executives aiming to improve financial system resilience.

Additionally, this study spans the period from 2010 to 2022, including the oil price collapse of 2014–2016, the COVID-19 shock of 2020–21, and the 2022 global tightening cycle. Furthermore, most existing research in this field relies solely on accounting ratios (Appah, Duoduo, & Eburunobi, 2024; Nkiri & Ofoegbu, 2022), focusing either on a single aspect, such as bank-specific determinants (Ozili, 2019; Saheed, 2018) or macroeconomic factors (Maryam & Adamu, 2017). Only Akani and Uzah (2018) attempt a two-tier interaction, and even then, behavioral determinants are absent. This study integrates bank-specific, macroeconomic, and managerial behavioral variables within a unified framework, capturing their interaction effects.

Against this backdrop, this study investigates the determinants of financial distress of listed DMBs in Nigeria. These findings aim to inform prudential regulation guidelines, redefine risk management frameworks and practices, and contribute to the global literature on banking fragility in emerging economies. Ultimately, this research provides a more comprehensive, policy-oriented understanding of the determinants of financial distress, blending methodological rigor with practical relevance. Based on the theoretical framework and prior studies, the following hypotheses are tested:

H1: Capital adequacy, exchange rate, asset quality, inflation, liquidity, and managerial overconfidence positively affect financial distress.

H2: Deposit structure, bank size, and GDP negatively affect financial distress.

2. LITERATURE REVIEW

2.1. Conceptual Review

2.1.1. Financial Distress: A Global Perspective

Financial distress describes a state in which an economic agent is unable to honor contractual payments as they occur and when due, often due to insufficient or negative liquid reserves (Isayas, 2021). Contemporary research provides evidence that financial distress is multi-causal; internal issues such as weak corporate governance, a poor asset portfolio, and sub-optimal risk management (Ahmed, Patel, & Sharma, 2023; Akinlo & Dada, 2024) interact with exogenous factors (macroeconomic meltdowns, inflationary shocks, financial market volatility, regulatory shifts) to erode cash flow adequacy (Eze, Eke, & Igwe, 2024; Ojo & Okafor, 2023). Recent crises vividly illustrate this interaction. The COVID-19 recession, for example, depressed global demand and disrupted global supply chains, thereby draining revenue bases and exposing unstable corporate financial positions (Barai & Dhar, 2024). Where organizations have not integrated a thorough cost control system or contingency liquidity reserve, transient cash flow issues can quickly lead to insolvency.

2.1.2. Financial Distress in Nigeria

Nigeria's financial sector reflects the global trend, but its complexity is exacerbated by structural issues, including energy shortages, exchange rate problems, and significant challenges to its financial health (Loescher & Kaltenbrunner, 2025). Within DMBs, empirical studies associate financial distress with high non-performing loans, weak risk management frameworks, and corporate governance failures (Rahmania, Wulandari, & Marfu, 2024). Moreover, macroeconomic instability, including volatile oil revenues, currency devaluation, and high inflation, exacerbates bank distress, depleting capital buffers more rapidly than they can be replenished (Singh, Das, & Kumar, 2024). Additionally, technological disruption worsens these issues; banks facing digital transformation hurdles experience revenue decline and increased operational risks, further deepening financial hardship for firms (Onyeka, Vitalis, Chidiebube, U-Dominic, & Chibuzo, 2024).

2.1.3. Determinants of Financial Distress

The existing empirical literature has identified a wide range of factors that contribute to financial distress. This study concentrates on these fundamental determinants:

i. Capital adequacy: A thin equity-based finance increases solvency risk when loan losses intensify (Atman & Lamarque, 2025). Nigerian dataset reveals that undercapitalized DMBs attract regulatory sanctions, which further diminish profitability.

ii. Asset quality: An elevated NPL ratio reduces earnings quality and triggers costly loan loss provisions (Mulchandani, Ganguli, & Mulchandani, 2025)

iii. Deposit Structure: Overdependence on irregular wholesale deposits reduces a bank's survival horizon under financial distress (Nguyen, 2025).

iv. Bank Size: For larger organisations, they can withstand financial shocks (Mawardi et al., 2024)

v. Firm liquidity: Low liquidity levels cause funding squeezes and can lead to the mandatory sale of the company's assets (Alzoubi, 2025)

vi. Gross Domestic Product: Economic recession affects lenders' ability to pay and inflates default rates (Nguyen, 2024).

vii. Inflation: High inflation reduces real returns, affects pricing models, and raises funding costs (Nie, Song, & Zhang, 2024).

viii. Exchange rate: Depreciation inflates the currency burden of foreign debt and trade credit.

ix. Managerial overconfidence: Behavioral miscalibration can induce excessive leverage, firm risk, and an enlarged credit base. This is a determinant still understudied in emerging nations (Addo, Pathan, & Ongena, 2024).

2.2. Theoretical Review

Several theories have been proposed to explain the factors that contribute to financial distress. For example, the market discipline theory posits that investors and shareholders price bank risks, thereby rewarding prudent firms and penalizing excessive risk-takers (Matos, Teixeira, & Dutra, 2025). However, critics argue that market forces alone cannot curb poor risk-taking and mismanagement. Additionally, Freeman (1984) stakeholder theory broadens the focus to include all stakeholders. Reputational risk is often overlooked in classical finance; a corporate reputation issue can lead to capital flight and liquidity crises (Akyildirim, Corbet, Nicolau, & Oxley, 2025). A financial scandal is more damaging to a reputation than direct financial loss.

Furthermore, the agency theory proposed by Jensen and Meckling (1976) suggests that misaligned compensation between principals and management can lead to risk-taking biases, resulting in issues in financial reporting and ultimately, corporate distress (Jain, Zaman, & Harjoto, 2024). Information asymmetry is heightened in Nigerian DMBs, where different shareholding categories and inconsistent disclosure standards prevail. Empirical evidence indicates that weak corporate boards and poorly structured executive compensation exacerbate NPL accumulation, supporting agency theory. Additionally, Minsky's financial instability theory (Khatatbeh, Samman, Al Salamat, & Meqbel, 2024) examines irregularities in corporate performance, where firms may temporarily have cash flows exceeding their debt, only for corporate debt to surpass cash flows soon after, impairing their ability to meet short-term obligations. This occurs in countries with fragile financial systems, despite the capacity of hedge funds.

The theoretical framework for this study is the financial ratio theory, which focuses on analyzing critical financial ratios to appraise the financial health of an entity. Financial ratios serve as quantitative indicators that help pinpoint potential weaknesses in DMB's operational activities and also guide investors in their decision-making processes (Hajek & Munk, 2024). When applied appropriately, financial ratio theory provides a systematic framework that helps identify distress signals or early predictors of financial troubles by examining how specific ratios behave when banks are nearing or entering financial distress.

For instance, liquidity ratios reflect a bank's ability to meet short-term obligations, and a high loans-to-deposits ratio or low liquid assets ratio may signal that the bank is over-leveraged or illiquid (Akram & Hushmat, 2024), which is a key indicator of financial distress. Additionally, potential losses (negative ROA and ROE) are warning signs of financial distress. Additionally, a low capital adequacy ratio indicates that the bank is highly leveraged, thereby increasing its vulnerability to economic shocks. Additionally, a spike in the NPL ratio often precedes a bank's failure or restructuring (Mulchandani et al., 2025). Finally, financial ratio theory also draws on Altman's Z-score model, the CAMEL framework, and early warning systems in risk management protocols (Nurfadillah & Yulianti, 2024).

2.3. Empirical Review of Literature and Research Gap Structure

2.3.1 Firm-Level Determinants of Financial Distress

Over a decade of studies covering listed firms in multiple emerging markets, panel data, and cross-country comparisons have identified capital adequacy, liquidity, asset quality, profitability, leverage, and bank size as key determinants of financial distress or performance. The findings are remarkably consistent: Studies such as those by Appah et al. (2024), Atoi (2018), and Nkiri and Ofoegbu (2022) have focused on liquidity and capital adequacy. They opine that thin liquidity and under-capitalization reduce corporate financial resilience. From a different but related perspective, Ozili (2019) and Muchori and Wanjala (2020) revealed that non-performing loans negatively affect Nigerian and Kenyan banks, respectively.

2.3.2 Macro-Economic Determinants of Financial Distress

From a macroeconomic perspective, Akani and Uzah (2018) and Maryam and Adamu (2017) reveal that exchange rate volatility, inflation, and low GDP intensify corporate internal weaknesses, reducing their ability to meet both short-term and long-term obligations. Additionally, Chidozie and Ayadi (2017) and Cherutich (2021) suggest that operating efficiency is associated with increased financial distress. Furthermore, Rahayu, Kusuma, and Arifin (2025), focusing on ASEAN nations, the analysis reveals that inflation and interest rates significantly increase the chances of financial distress in ASEAN firms, while GDP growth significantly reduces it.

2.3.3 Mixed Determinants of Financial Distress

Kebede et al. (2024), focusing on Ethiopian insurance firms and a pooled regression analysis, it was revealed that ROA, liquidity, and firms' earnings growth had a negative but significant impact on financial distress. Additionally, inflation, leverage, and the tangibility of assets had a positive and significant impact on financial distress. Furthermore, Metwally et al. (2025) evaluated the drivers of financial distress in the MENA region. Adopting a GMM methodology, the study revealed that inflation had a non-significant impact on financial distress. Notwithstanding, GDP, ROA, ROE, and profitability had a significant impact on corporate financial distress. In addition, Movsesyan and Seissian (2025), adopting a generalized ordered logit model, revealed that leverage, ROA, interest rates, GDP, and firm size significantly impact the financial distress of mining firms on the Lima Stock Exchange. Table 1 presents the literature synthesis and gap analysis.

Table 1. Analysis of research gap.

Study (Year)	Sector /Country	Period/ N	Method	Key Determinants	Key Nulls/Mixed	Direct Relevance
Metwally et al. (2025)	MENA	2002-20 Banks	GMM	GDP, ROA, ROE, and profitability	Inflation	Introduction of a more stable economic environment may reduce the likelihood of financial distress outcomes.
Appah et al. (2024).	Manufacturing /Nigeria (NGA)	2018-22 /30	GMM	None	Profitability	Reveals that firm ratios can lose relevance and calls for other measures of financial distress.
Lazarus et al. (2023)	Banks /NGA	2010-20/8 DMBs	Pooled OLS	Capital adequacy, risk efficiency	Liquidity risk	The liquidity paradox indicates unobserved heterogeneity.
Nkiri and Ofoegbu (2022)	Banks /NGA	2006-20/30 DMBs	Logit & MDA	Liquidity (-ive) Profitability (-ive)	-	The findings validate the ratio-based early warning metric but ignore macroeconomic shocks.
Cherutich (2021)	Manufacturing /Kenya	2009-18/4 firms	Panel OLS	Liquidity (+ive) (ROA/ROE)	Leverage (insignificant)	Cross-sector evidence for liquidity primacy
Muchori and Wanjala (2020)	Banks/Kenya	2009-18/43 Banks	Panel OLS	Operating efficiency (-ive)	Capital adequacy, liquidity (insignificant)	The findings highlight efficiency as an overlooked determinant.

Study (Year)	Sector /Country	Period/ N	Method	Key Determinants	Key Nulls/Mixed	Direct Relevance
Ozili (2019)	Banks/NGA	2013-16/ Industry	OLS	NPL (-ive), Efficiency (+ive), Capital adequacy (+ive)	GDP, Inflation (Insignificant)	This study prioritizes micro-prudential determinants over macroeconomic determinants.
Yinusa, Olowofela, Yunusa, and Folami (2021)	Banks/NGA	2006-16/15 DMBs	GLS	Liquidity, Leverage, Profitability (+ive)	-	This study confirms standard CAMEL ratios for corporate survival.
Akani and Uzah (2018)	Banks/NGA	1990-2016	VECM	Money supply, Credit expansion (+ive)	Inflation (Insignificant)	This study demonstrates macro-micro interaction
Atoi (2018)	Banks/NGA	2014-17/2 Banks	GMM-VAR	Lending rates (+ive), risk-return trade off	-	Short-run vs long-run resilience variation
Saheed (2018)	Banks/NGA	2008-16/14 DMBs	Fixed effect/Random effect	Capital adequacy (+ive), Credit risks (-ive)	-	This study supports the Basel link between the capital buffer and ROA.

3. DATA AND RESEARCH METHODS

This study employs an ex-post facto research design, which is appropriate for research involving variables that cannot be altered due to ethical constraints. It utilizes secondary data to examine the relationship between financial distress and a set of independent variables. The study employs a panel ordinary least squares methodology using E-Views 9.0. The analysis includes a descriptive examination to understand the distribution and spread of variables, a correlation matrix, and a Variance Inflation Factor (VIF) test to assess multicollinearity. It also includes a panel unit root test to determine the stationarity of variables and a panel regression analysis to evaluate the hypothesized relationships. The research population comprises the 14 listed deposit money banks in Nigeria. Due to consistent data availability, judgmental sampling is utilized to focus on eight listed DMBs. The research data for all variables were sourced from audited financial statements of the selected DMBs and the World Bank development indicators.

Specifically, managerial overconfidence was captured through textual analysis of the chairman's statement in the annual report. Using content analysis, we identify linguistic markers, such as the excessive use of optimistic and assertive expressions, relative to cautious or pessimistic language markers. This methodology advances previous studies that primarily adopt demographic (CEO age and tenure) and financial proxies by directly capturing managerial tone to ascertain overconfidence. It provides a novel, context-specific behavioral measure of overconfidence in Nigerian DMBs.

Consequently, due to the limited number of cross-sections (eight listed DMBs) relative to the number of independent variables, the random effects model would not be suitable as an estimator. Therefore, the study adopts a Fixed Effects (FE) model to provide unbiased and consistent estimates under these conditions. The adoption of an FE model is justified because it controls for unobserved heterogeneity across the selected DMBs, thereby limiting potential omitted variable bias. Additionally, robust standard errors are applied to account for heteroscedasticity and autocorrelation in the dataset. Finally, a Fully Modified Ordinary Least Squares (FMOLS) regression was performed to capture long-run interactions and ensure the robustness of the outcomes and estimates.

3.1. Model Specifications

The study modifies the model of Olaoye and Olarenwaju (2015) to accommodate variables relevant to the Nigerian financial environment. The adapted econometric model is specified as:

FD = f (CA, ER, AQ, DS, BZ, GDP, IR, LR, MOC) ..... (i)

$FDIS = \beta_0 + \beta_1 CA_{it} + \beta_2 ER_{it} + \beta_3 AQ_{it} + \beta_4 DS_{it} + \beta_5 BZ_{it} + \beta_6 GDP_{it} + \beta_7 IR_{it} + \beta_8 LR_{it} + \beta_9 MOC_{it} + \mu_{it}$ ..... (ii)

Where:

FDIS= Financial Distress

CA= Capital Adequacy

ER= Exchange Rate

AQ= Asset Quality

DS= Deposit Structure

BZ= Bank Size

GDP = Gross Domestic Product per Capita

IR= Inflation Rate

LR= Liquidity Ratio

MOC= Managerial Overconfidence

$\beta 0$ is the intercept of the model.

$\beta 1$ to $\beta 9$ are the parameters to be estimated for equation 3.

μ = Error Term

3.2. Description of Variables and Sources of Data

This section captures the variables in the research model, their measurement, and sources. Table 2 captures the measurement of the research variables

Table 2. Definition and sources of variables

Variable	Description / Measurement	Sources
FDIS	Financial distress is measured using the Altman Z-score	Ikpesu (2019)
CA	Capital Adequacy: Total equity/Total assets	Ibekwe, Ibekwe, and Nnebe (2023)
ER	Exchange Rate: absolute effective exchange rate index	Akani and Uzah (2018)
AQ	Asset Quality: Non-performing loans/total loans and advances	Olaoye, Okorie, Eluwole, and Fawwad (2021)
DS	Deposit Structure: Total deposits/total assets	Olaoye et al. (2021)
BZ	Bank Size: Natural logarithm of total assets	Okere, Nonso, Bibiana, Uke, and Okere (2024)
GDP	GDP per capita (Current US$) as a measure of economic growth	Akani and Uzah (2018)
IR	Inflation Rate: Annual consumer price index (%)	Akani and Uzah (2018)
LR	Liquidity Ratio: Current assets/Current liabilities	Okeke, Abdoush, Jemutu, and Okere (2025)
MOC	Managerial Overconfidence: A textual analysis of managerial statements, focusing on the chairman's statement in the annual report, which captures the personal pronouns (I, me, myself) used in his text.	Adebanjo and Wisdom (2024)

4. RESULTS

4.1. Descriptive Statistics

The descriptive statistical analysis was used to summarize the central tendency, dispersion, and distribution characteristics of the variables. Table 3 above shows significant variation across the variables in the dataset, indicating heterogeneity among DMBs in Nigeria during the examined period. Moreover, financial distress exhibited considerable variability (standard deviation = 8.458), with dataset values ranging from -1.536 to 85.726, indicating

systemic instability in the financial sector during this period. Additionally, capital adequacy (CA) had a relatively low mean (0.157), reflecting limited capital buffers of DMBs. Similarly, asset quality (AQ), measured by the ratio of non-performing loans to total loans and advances, displayed a high standard deviation (1.444), indicating potential credit risk issues.

Table 3. Descriptive test.

Tests	FD	CA	ER	AQ	DS	BZ	GDP	IR	LR	MOC
Mean	1.841	0.157	114.557	0.397	2.492	2.36E+12	2401.524	12.963	15.384	0.033
Median	0.539	0.124	117.021	0.040	0.674	1.85E+12	2280.111	13.246	1.212	0.029
Maximum	85.726	0.944	133.150	9.259	13.927	1.06E+13	3200.953	18.847	770.524	0.616
Minimum	-1.536	0.000	100.000	0.000	0.001	1.25E+10	1941.879	8.047	0.128	0.004
Std. Dev.	8.458	0.188	9.831	1.444	4.112	2.13E+12	375.329	3.089	79.000	0.059
Skewness	9.537	2.528	0.031	4.460	1.980	1.505	0.790	0.113	8.639	9.210
Kurtosis	94.892	9.685	2.142	23.170	5.310	5.530	2.441	2.200	82.046	90.908
Jarque-Bera	38168.12	304.407	3.208	2107.82	91.08	67.01	12.16	2.99	28369.29	34957.32
Probability	0.000	0.000	0.201	0.000	0.000	0.000	0.002	0.224	0.000	0.000
Obs.	104	104	104	104	104	104	104	104	104	104

Furthermore, the liquidity ratio showed extreme skewness and kurtosis, suggesting that only a few banks maintained high liquidity levels. Finally, the Jarque-Bera statistics confirmed non-normality for most variables in the dataset. Table 4 presents the correlation analysis for the research variables, providing insights into their relationships and the strength of their associations.

Table 4. Correlation matrix.

	FD	CA	ER	AQ	DS	BZ	GDP	IR	LR	MOC
FD	1.000 ------									
CA	0.084 (0.398)	1.000 ------								
ER	0.248** (0.011)	0.143 (0.147)	1.000 ------							
AQ	0.419* (0.000)	-0.050 (0.614)	0.191 (0.052)	1.000 ------						
DS	0.042 (0.670)	0.660* (0.000)	0.154 (0.118)	0.117 (0.24)	1.000 ------					
BZ	-0.157** (0.111)	-0.371* (0.000)	0.233** (0.017)	-0.033 (0.74)	-0.469* (0.000)	1.000 ------				
GDP	-0.079 (0.423)	-0.149 (0.131)	0.234** (0.02)	-0.155 (0.12)	-0.127 (0.20)	-0.136 (0.17)	1.000 ------			
IR	0.233** (0.017)	0.265* (0.007)	-0.022 (0.824)	0.169 (0.09)	0.129 (0.19)	0.111 (0.26)	-0.761* (0.00)	1.000 ------		
LR	-0.0002 (0.100)	0.208** (0.034)	0.049 (0.624)	-0.029 (0.77)	0.475* (0.000)	-0.186 (0.06)	0.165 (0.095)	-0.170 (0.08)	1.000 ------	
MOC	0.022 (0.823)	-0.106 (0.282)	0.093 (0.350)	0.074 (0.46)	-0.074 (0.455)	0.277 (0.00)	-0.132 (0.182)	0.050 (0.618)	-0.071 (0.47)	1.000 ------

Note: * for ($p < 0.05$), ** for ($p < 0.01$).

4.2. Correlation Analysis

The correlation analysis presented in Table 4 showed no multicollinearity issues among the independent variables, as no correlation exceeded the 80% threshold. Notably, positive associations were observed between FDIS and ER ($r = 0.25$, $p < 0.05$), AQ ($r = 0.419$, $p < 0.01$), and IR ($r = 0.233$, $p < 0.05$), suggesting that exchange rate, asset quality deterioration, and inflation contribute to increased financial distress.

Conversely, bank size (BZ) and GDP displayed negative relationships with FDIS (r = -0.157 and -0.079, respectively), indicating that larger banks and economic stability help reduce financial vulnerability. Table 5 presents the multicollinearity test for the variables using the Variance Inflation Factor (VIF) test.

Table 5. Variance inflation factors test.

Variable	Coefficient Variance	Uncentered VIF
AQ	0.35	1.17
BZ	5.14	1.82
CA	38.57	1.62
DS	0.20	2.03
ER	0.013	1.75
GDP	1.78	4.41
IR	0.19	3.67
LR	0.00	1.23
MOC	195.44	1.21

Note: * for (p < 0.05), ** for (p < 0.01), *** for (p < 0.001)

4.3. Diagnostic Tests

According to the VIF test in Table 5, multicollinearity issues are not a concern in the research model, as all VIF values are below the acceptable threshold of 5. Therefore, all independent variables are reliably captured in the regression analysis without biasing the coefficient estimates.

Table 6. Augmented Dickey Fuller (ADF) unit root test.

Variables	ADF		Order of Integration
	Level	1st Diff	
FD	18.3286(0.3050)	29.1304**(0.0231)	I(1)
CA	25.9814(0.0543)	50.4169*(0.0000)	I(1)
ER	25.2992(0.0647)	47.0806*(0.0001)	I(1)
AQ	74.7371*(0.0000)	120.011*(0.0000)	I(0)
DS	38.8421*(0.0011)	69.4133*(0.0000)	I(0)
BZ	7.90327(0.9517)	32.8559*(0.0077)	I(1)
GDP	23.7240(0.0957)	36.6310*(0.0024)	I(1)
IR	12.4384(0.5711)	33.2077*(0.0027)	I(1)
LR	52.6709*(0.0000)	85.8746*(0.0000)	I(0)
MOC	29.5603**(0.0204)	38.1854*(0.0014)	I(0)

Note: * for (p < 0.05), ** for (p < 0.01), *** for (p < 0.001)

The augmented Dickey-Fuller unit root test in Table 6 showed that most variables were stationary at the first difference, except for AQ, DS, LR, and MOC, which were stationary at the level. The integration order confirmed the suitability of using panel regression analysis, which prevents spurious estimations and ensures the conditions for a robust regression model. Table 7 presents a key summary of all regression estimates used to achieve the research objectives.

Table 7. Regression analysis summary (Fixed Panel OLS VS FMOLS).

Variable	Panel OLS	P-value	FMOLS	P-value	Significance
Asset quality	1.04	0.31	2.14	0.00	Long-run
Bank size	-4.54	0.07	-2.31	0.00	Long-run
Capital adequacy	3.91	0.00	3.20	0.61	Short-run
Deposit structure	-0.16	0.19	-1.40	0.00	Long-run
Exchange rate	0.08	0.02	0.35	0.00	Both
GDP	-0.00	0.46	0.00	0.81	Not significant
Inflation rate	0.11	0.02	0.92	0.04	Both
Liquidity ratio	0.00	0.05	0.02	0.18	Short-run

Variable	Panel OLS	P-value	FMOLS	P-value	Significance
Managerial overconfidence	-5.96	0.16	14.84	0.29	Not-significant
Adj R^2	0.34		0.36		
F-statistics	4.28	0.00			
Durbin Watson	1.41				

Note: * for ($p < 0.05$), ** for ($p < 0.01$), *** for ($p < 0.001$)

4.4. Regression Analysis

The Panel regression analyses were conducted using both the FE Panel OLS and the FMOLS to ensure robustness of results and to examine the determinants of financial distress in listed deposit money banks in Nigeria. The FE panel OLS indicates that capital adequacy (CA) has a positive (3.91) and significant (0.00) relationship with financial distress, suggesting that higher adequacy ratios lead to increased corporate financial stress, possibly reflecting regulatory reforms or heightened capitalization requirements. Additionally, the exchange rate and inflation show a positive and significant impact on financial distress, indicating that macroeconomic imbalances contribute to corporate vulnerability. Bank size (BZ) shows a negative (-4.54) but no significant (0.07) impact on financial distress, while deposit structure (DS), liquidity ratio (LR), asset quality (AQ), GDP, and managerial overconfidence (MOC) display mixed significance.

Furthermore, the FMOLS model, which captures long-term cointegrating relationships, confirms the robustness of the ER, IR, DS, AQ, and BZ effects, with coefficients that are broadly consistent with the FE Panel OLS findings. Notably, Asset Quality and the exchange rate emerge as significant long-term determinants, while GDP and CA no longer show significance, highlighting differences between short- and long-run effects. The F-statistic result from the FE Panel OLS indicates that the model is significant, implying that the chosen determinants have a substantial impact on financial distress in DMBs in Nigeria.

5. DISCUSSION AND POLICY IMPLICATIONS

The findings of this study reveal that both macroeconomic and firm-level factors significantly influence financial distress in Nigerian DMBs. Specifically, the exchange rate and inflation exert a significant impact on financial distress, indicating that currency volatility and inflation outcomes increase DMBs' vulnerability. These results are consistent with those of Akani and Uzah (2018), Maryam and Adamu (2017), and Muchori and Wanjala (2020), underscoring that macroeconomic instability remains a systematic risk factor in developing banking systems. This negates the findings of Metwally et al. (2025), which revealed that inflation has no significant effect on corporate distress.

Conversely, deposit structures and asset quality emerge as key bank-specific determinants of financial distress, implying that banks with sound credit risk management, as well as those with stable deposit bases, are better protected from insolvency issues (Lazarus et al., 2023; Muchori & Wanjala, 2020). Additionally, while capital adequacy shows significance in the short run, it loses significance in the long-run model (FMOLS), suggesting that regulatory capital levels may buffer immediate shocks but are not significant in mitigating long-term financial distress.

Furthermore, while bank size provides evidence of economies of scale, reducing long-term vulnerability, GDP, liquidity ratio, and MOC exhibit insignificant effects. However, their directional impacts provide key insights into the structural dynamics and peculiarities of the Nigerian banking sector. Additionally, it suggests that internal management characteristics and liquidity management may play a limited role in corporate financial sustainability compared to macroeconomic drivers. Although the upper echelon theory posits that managerial behavior significantly impacts financial outcomes, the study reveals a non-significant impact. This is possible due to institutional and regulatory constraints in emerging markets, as well as board-level collective decision-making systems.

5.1. Theoretical and Economic Implications

The research findings indicate that macroeconomic and firm-level factors primarily influence financial distress in DMBs. This outcome reinforces the financial ratio theory, particularly highlighting the influential role of asset quality and deposit structure in assessing financial distress. The significant relationship between asset quality and financial distress supports the credit risk theory, emphasizing how declining asset quality increases insolvency risks. Additionally, the influence of the exchange rate on financial distress aligns with open economy macro-financial theories, demonstrating the sensitivity of banks' financial stability to external shocks. The significant results regarding asset quality and deposit structure indicate that maintaining a stable and diversified deposit base, along with comprehensive risk management, is vital for corporate resilience.

For policymakers and regulators, the notable impact of inflation and exchange rate on financial distress underscores the importance of maintaining foreign exchange market stability and implementing macro-prudential buffers. Moreover, the positive yet insignificant effect of capital adequacy raises questions about compliance regulation and enforcement, suggesting the need for more qualitative assessments beyond numerical thresholds.

Finally, the UET remains relevant despite the insignificant outcome of MOC. The insignificant impact is a key revelation that managerial biases may not translate to policy outcomes in all contexts and therefore promotes the use of UET in emerging nations to account for factors that may drive or redirect the effect of managerial behavioral traits. From a practical perspective, UET should not be underestimated, as managerial overconfidence can create potential risks. Organizations can mitigate these risks by strengthening board oversight systems to balance executive optimism and ensuring more balanced decision-making systems.

6. CONCLUSION

This study examined the determinants of financial distress of listed deposit money banks in Nigeria using the financial ratio theory as its conceptual lens. Empirical results reveal that both macroeconomic and firm-level factors are critical determinants of financial distress, with exchange rate, inflation, asset quality, deposit structure, and bank size emerging as key determinants. The short- and long-term analyses reveal nuanced variations, critically emphasizing the need for dynamic, multi-dimensional risk management strategies.

Although liquidity ratio, MOC, and macroeconomic factors such as GDP were not statistically significant, their directional impact provides key policy insights. These research findings posit that corporate financial distress is multidimensional, driven by both firm-specific variables and macroeconomic determinants. Finally, the statistically significant regression model validates the robustness of the chosen indicators and estimation approach.

Based on the above empirical findings, the following recommendations were advanced:

i. Regulators should enforce stricter provisioning and non-performing loans management frameworks to improve asset quality.

ii. The Central Bank of Nigeria should stabilize the exchange rate through intervention mechanisms and transparent foreign exchange policies.

iii. There should be a promotion of mergers and acquisitions among smaller banks to promote economies of scale and enhance corporate stability.

6.1. Limitations of the Study

While this study provides significant outcomes for policymaking, it is not without limitations. First, the sample was restricted to eight listed DMBs, selected through a judgmental sampling technique based on the availability of consistent data and continuous listing status. While this enhances consistency, it may introduce sample bias and limit the generalizability of findings to micro-finance banks or unlisted banks in Nigeria. Second, the measurement of managerial overconfidence through textual analysis, although novel, is subject to interpretation biases common to

content analysis. Third, although diagnostic tests were conducted, the models inherently assume a linear relationship and may not account for dynamic nonlinearities.

Finally, the study's external validity is limited to the Nigerian context and may not apply to the institutional realities of other emerging markets. These limitations notwithstanding, the study provides robust insights into the determinants of financial distress in DMBS in Nigeria and offers opportunities for future research.

6.2. Contribution to knowledge

This research contributes to the growing empirical literature on financial stability in emerging markets by:

i. Empirically integrating firm-level and macroeconomic indicators to predict financial distress in a developing economy banking context.
ii. Introducing behavioral finance through managerial overconfidence as a behavioral driver in the financial distress model.
iii. Broadening the scope of financial ratio theory by integrating it within the Nigerian unstable financial market.

6.3. Future Research Directions

Building on current research findings, future studies could expand the methodological framework by employing nonlinear or dynamic panel methods, such as the Panel General Methods of Moments (GMM), to address endogeneity. Moreover, employing a broader dataset covering multiple emerging economies would improve external validity. Lastly, future studies can explore mediating factors such as institutional quality, regulatory reforms, and artificial intelligence, which may influence the outcomes of financial distress in DMBs.

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