CAMEL Indicators as Tools for Predicting Bank Financial Health Conditions in Nigeria

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ABSTRACT

The series of reform initiatives and consolidation strategies in the banking sector was created to improve the financial health of banks in Nigeria and strategically reposition the Nigerian economy. This paper used the CAMEL predictor model to examine the financial health of selected banks in Nigeria after adopting these reforms from 2012 to 2021. Data for the study was collected from the audited annual reports of the eight banks. The study applied the discriminant (Z-score) technique and regression analysis to scrutinize the effect of Capital Adequacy, Assets Quality, Management Quality, Earnings Quality, And Liquidity Efficiency (CAMEL) variables on the bank's financial health conditions. The discriminant analysis revealed that 5 banks, i.e. (62.5%) of the banks investigated, may fall into distress status shortly if adequate measures are not applied. In comparison, only 3 banks (37.5%) are financially sound. The study reveals that CAMEL indicators significantly predict bank financial health in Nigeria. However, whilst capital adequacy (CA) and liquidity sufficiency are insignificant predictors of a bank's financial health, assets quality, management quality, and earnings quality significantly predict the bank 's financial health in Nigeria. The pivotal role of banks in Nigeria's economy requires that the findings of this study should not be downplayed. Thus, bank managers should focus on managing their CAMEL indicators to avoid distress. Supervisory authorities should also intensify surveillance by conducting a CAMEL analysis of banks annually to reduce corporate failure incidences and positively reposition Nigeria's economy.

Keywords: Assets Quality, Capital Adequacy, Earnings Quality, Liquidity Efficiency, Management Quality

1. INTRODUCTION

Banking reforms in Nigeria constitute a fundamental component of the comprehensive reform initiatives implemented nationwide to reposition the Nigerian economy strategically. These reforms aim to achieve the overarching macroeconomic objectives of maintaining price stability, attaining full employment, fostering robust economic growth, and ensuring domestic and international equilibrium. Aligned with this overarching vision, the banking sector is anticipated to effectively execute its core role in intermediation, securing its position as a significant participant in the global financial markets. The reform initiatives and consolidation strategies, such as mergers and acquisitions orchestrated by the Central Bank of Nigeria (CBN), have yielded substantial outcomes. As a consequence of these measures, the minimum capital requirement surged from N2 billion to an enforced minimum of N25 billion, and a reduction in the number of banks from 89 institutions to 25 in 2005, 24 in 2007, and eventually stabilising at 16 in 2017 as recognised entities listed on the Nigerian Stock Exchange (NSE). Banks, as financial institutions, play a vital role in the development of any nation; hence, they are the most strictly regulated and supervised sector of the economy (Sahut & Mili, 2018). The failure of a bank has adverse consequences on economic activities. Consequently, appraising bank activities and detecting early signals are the top priorities of regulators and global financial authorities.

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Those saddled with the management and supervision of banks must be abreast of the risk factors confronting it and ensure that banks are adequately managed (Adolphus & Jibaniya, 2021). Distress could be financial, operational, and managerial weaknesses that prevent the institution from meeting its obligation to customers, shareholders, and the economy as a whole (Ojo, 2015). Elkhatim and Salim (2017) identified distressed banks as banks whose operations are suspended. Secondly, banks recapitalised or those that received liquidity from monetary authorities. Thirdly, banks that eventually merge with healthy banks due to financial distress, and lastly, those closed by the regulatory agency. Studies have pinpointed various company failure determinants and formulated models for forecasting company failure. Most distress prediction techniques or models are intended to capture a firm's inability to cater to its financial commitments.

The COVID-19 pandemic caused both small and large organisations to face unprecedented business risks, challenging the viability of businesses and jeopardising the fundamental assumption of business continuity. The ramifications of business failure are multi-faceted, encompassing losses in investments, employment, government revenues, and overall economic activities. The consequences are not limited to financial aspects, as they can also lead to psychological distress and, in extreme scenarios, even the loss of lives. The collapse of banks not only disrupts the crucial role of efficient intermediation but erodes public trust in the financial system.

Furthermore, despite the interventions of regulatory authorities, the financial cost of stabilising Nigeria's financial system following the global financial crisis was estimated at NGN1.75 trillion, equating to 5.85% of the country's GDP of NGN29.498 trillion as of December 2018. To mitigate the resurgence of any bank failure and its potential repercussions, early detection and prevention models of corporate distress or bankruptcy measures are required in Nigeria's financial services sector.

Studies have pinpointed various company failure determinants and formulated models for forecasting company failure or its inability to meet financial commitments (Jardin et al., 2019). For instance, Pam (2013) and Unuafe and Afolabi (2014) employed discriminant analysis to predict the state of health of some banks in Nigeria. These studies merely considered the state of the financial health of the banks and the predictive power of capital adequacy, asset quality, management quality, earnings quality, and liquidity efficiency (CAMEL) without considering the signs and effects. Rostami (2015) used CAMEL indicators to gauge the bank failure situation in Iran from 2010 to 2014. The study calculates the CAMEL ratios of each firm and compares them with average banking industry ratios.

This study fills these gaps using the Z-score technique to classify the financial institutions into their respective financial health conditions and apply the logic regression, which can differentiate healthy banks from unhealthy banks. It further determines the significant components in the CAMEL analysis that can predict a bank's financial health. With these techniques, it is possible to pinpoint the CAMEL indicators that exhibit the strongest indicators of bank distress conditions.

This study investigates the key indicators of financial distress and bankruptcy among financial institutions in Nigeria. It identifies which specific CAMEL indicators exhibit the strongest predictive power for bank distress conditions.

The study analyses financial distress and bankruptcy prediction from 2012 to 2021. The study relies on content analysis of secondary data sources relevant to financial distress and insolvency in the Nigerian banking sector. The data includes financial statements, regulatory reports, economic indicators, and other relevant sources. The study acknowledges that various external factors beyond the scope of this research can influence financial distress and bankruptcy prediction. While the study aims to predict financial distress and bankruptcy among banks, it recognises that prediction models and methodologies may not always provide accurate forecasts. The study acknowledges the inherent limitations and uncertainties associated with prediction models and their ability to capture all relevant variables and complex interactions accurately.

2. LITERATURE REVIEW

This section delves into the existing body of knowledge related to the analysis of financial distress and bankruptcy prediction, specifically focusing on financial institutions operating in Nigeria.

2.1 Corporate Failure

Corporate failure becomes evident in a financial institution when it grapples with a weakened deposit base, inadequate management practices, and an inability to meet stipulated capitalisation standards (Central Bank of Nigeria, 2019). Consequently, a financial organisation is considered distressed when it grapples with severe economic, operational, and executive decision-making deficiencies that hinder its capacity to fulfill its stakeholder commitments. Within the banking sector, failure transpires when banks encounter either liquidity shortages or debt, causing depositors to fear potential deposit losses, thereby disrupting contractual obligations. A bank exhibits preliminary indications of failure when it falls short of meeting its financial responsibilities as they become due.

2.2 Corporate Distress

Bongini et al. (2001) define distress as instances where a financial institution receives external support or is directly closed. They expand distress to encompass four events: i). Closure of the corporation. ii). Merger of corporate entities. iii). Recapitalisation of the financial institution by the Banking regulatory authorities such as the CBN, Nigeria Deposit Insurance Corporation (NDIC), or a crisis-specific bureau. iv). Temporary suspension of the financial institution's operations. This definition encapsulates crucial indicators of distress. A financial institution faces closure if it cannot fulfill its financial or regulatory obligations. To avert failure and safeguard public interest, the regulatory authorities might suspend a financial institution's operations when it's in distress to mitigate potential harm if the institution eventually closes.

Uzokwe and Ohaeri (2014) define bank distress as the inability of a bank to fully and punctually pay its depositors. They distinguish between marginal and terminal distress. Marginal distress occurs when a bank cannot pay all depositors, but the worth of its assets still exceeds its liabilities. In terminal distress, a bank's asset market value falls below its liabilities, indicating failure. Thus, not all distress may inevitably lead to corporate collapse if corrective measures are affected. For instance, in 2011, the NDIC identified ten Nigerian banks in some form of distress; three were recapitalised, while the rest were assimilated by other banks.

2.3 Bank Distress in Nigeria

Olukotun et al. (2013) documented that the first bank failure in Nigeria can be traced to 1930, followed by the Nigerian Mercantile Bank in 1936 and the Nigerian Perny Bank in 1946. Ashamu (2015) asserted that distress in the Nigerian banking industry is not new or accidental; it is both organic and systemic and has adverse economic consequences. For instance, the number of banks in the country dropped by 200 to as low as 9 in 1998. Out of the 89 banks, 14 were considered fairly sound, and 11 were unsound. Ojo (2015) stated that 34 banks out of 120 failed in Nigeria between 1994 and 2000. By September 2004, 25 banks were reported to have shown signs of distress, and 14 that could not be recapitalised at the end of 2005 had their license revoked. Indeed, at the end of 2005, only 25 banks out of 89 survived. Soludo (2004), cited in Ashamu (2015), identified Nigerian banks' challenges, including lack of liquidity, poor asset quality, weak capital base, and weak corporate governance.

Bank distress in Nigeria may be attributed to both micro and macro factors. For instance, it is reported that the government policy to withdraw public funds (deposits) from banks in addition to government monetary policy resulted in liquidity crises in the banking sector in 1989. This led to the collapse of many banks in Nigeria between 1994 and 1996 (Olukotun et al., 2013). Kama (2010) identified political interference and ownership structure as causes of bank distress in Nigeria. He added that going to the capital market more than once a year to source funds shows

ineffective bank management and a symptom of bank distress. Ojo (2015) stated that certain macroeconomic changes often paved the way for bank crises. He enumerated the macro-indicators to include balance of payment, inflation, interest rate, asset price changes, credit growth, etc. A banking system engulfed in crises can hardly perform its intermediation function if credit creation is hindered owing to low capital adequacy and a drop-in liquidity (Olukotun et al., 2013). Hence, they must assess these banks' specific factors to ascertain their adequacy.

2.4 Capital Adequacy, Managerial Quality, Earning Strength, and Liquidity Efficiency (CAMEL)

The evaluation of banks' health and their categorisations is facilitated through the CAMEL rating. Nonetheless, specific cautionary signals are universally applicable to most banks, including persistent low liquidity, consistent imposition of fines by regulatory agencies due to the failure to comply with regulations, high operating costs, charging exorbitant interest on loans and advances, often to compensate for high deposit costs and accommodate elevated risk, negative net asset value, rapid degradation of the portfolio, stemming from increased lending to high-risk clients leading to the emergence of problematic overdraft accounts among others.

Capital Adequacy: Assesses a bank's ability to manage disruptions in its financial position. This metric gauge the bank's financial soundness. A bank's capital adequacy is evaluated based on the risk weights assigned to different asset categories. Capital adequacy is often assessed through three ratios: Equity divided by total assets, Equity divided by debt, and (Equity + loan loss reserve) divided by loans.

Assets Quality: A financial institution's stability is jeopardised when its assets experience deterioration. To ascertain the effectiveness of assets in fulfilling their intended objectives, it is essential to assess their quality. This process typically involves checking their age and ensuring proper provisions for depreciation are estimated in computing accurate asset worth, potential over-exposure to specific risk categories like nonperforming loans, and assessing the overall performance of banks.

Managerial Quality: The effectiveness of a bank's workforce and leadership can be inferred from its performance metrics. It is crucial to assess both the educational and professional qualifications and the experiential knowledge of the Bank executives. Banks with highly skilled personnel are anticipated to exhibit greater efficiency and reduced susceptibility to financial troubles. A key indicator of managerial competence is the ratio of total operating expenses to total assets. A higher ratio signifies managerial inefficiency and raises the likelihood of corporate distress.

Earnings Strength: The continual sustainability of any corporate entity hinges on the capacity of the entity to generate a satisfactory return on its assets and the capital it has invested. This ability enables the bank to finance its expansion initiatives, uphold competitiveness within the market, and enhance its capital reserves. Ebhodaghe (1997) identified some profitability ratios, loan loss provision ratios, and personal expenses ratios for assessing a bank's earning capability.

Liquidity Efficiency: Mismanagement of short-term liquidity can drive banks towards insolvency. The assessment of bank liquidity includes using the cash and bank balances to total assets ratio as a liquidity indicator. Optimal liquidity indicates a match between liabilities ranked by maturity and corresponding assets.

Determining a bank's solvency can be difficult since financial distress might not be immediately apparent. Thus, the CBN and NDIC adopted a standard rating system to gauge bank distress levels. This system categorises banks as sound, satisfactory, or marginally distressed. Olaniyi (2007) suggests that banks labelled distressed by this system are subject to rigorous oversight or liquidation. However, the author points out that banks classified as sound may eventually be distressed. This implies that distress classification is somewhat reactive, and preventive measures are crucial for predicting the likelihood of failure and making effective decisions. Stewardship Theory was proposed by Donaldson and Davis (1991). In their work, they presented

an alternative view to the traditional Agency Theory and explored the concept of stewardship as an alternative corporate governance model. The Stewardship Theory posits that managers, including CEOs and top executives, are seen as stewards who protect the organisation's and its stakeholders' well-being. It suggests that managers are intrinsically motivated to do what is best for the company in the long run; rather than solely pursuing their self-interests, they will align the interests of shareholders and other stakeholders.

In pursuing stakeholders' interests, they will evaluate the banks' health, identifying key indicators of financial distress and bankruptcy. This motivation, however, will not exist when there is no evidence of trust that managers are less likely to act as responsible stewards. The theory advocates for empowering managers and delegating decision-making authority to them. When managers have a sense of ownership and autonomy, they are more likely to take a proactive and responsible approach to decision-making. By embracing the principles of Stewardship Theory, financial institutions in Nigeria can foster a corporate culture that prioritises responsibility, ethical behaviour, and long-term sustainability. This approach can help them anticipate and address financial distress signals early on, thereby reducing the risk of bankruptcy and ensuring the institution's stability and success over the long term.

Empirical evidence in the literature on the CAMEL framework is widely employed to evaluate the health conditions of banks (Kumar & Kishore, 2019). Rahman and Islam (2018) studied the health conditions of seventeen conventional private commercial banks in Bangladesh from 2010 to 2016. Based on the CAMEL rating system, the comparative analysis of various banks showed that Eastern Bank had the highest performance among sampled commercial banks. The efficacy of capital adequacy ratios in predicting the financial distress of commercial banks in Kenya from 2009 to 2015 using stepwise logistic regression was conducted by Karugu et al. (2018). They discovered that the capital adequacy ratio significantly predicts financial distress. Babajide et al. (2015) employed a survival analysis approach to predict bank failures in Nigeria from 2003 to 2011. The sample consisted of 39 failed and 18 non-failed banks. The study shows that banks with high non-performing loans to total loans plus leases and high operating expenses to average total assets tend to fail.

Pam (2013) investigated the potency of the Multiple Discriminant Analysis (MDA) Model in ascertaining the financial health conditions of Nigeria's Deposit money banks, 2 'failed' and 2 non-failed banks from 1999-2003. The study concluded that the MDA Model is a potent tool for predicting potential failure and should be unified with other models, such as the Altman Z-score. Egbunike and Igbinovia (2018) examined the impact of bankruptcy threats on the likelihood of earnings manipulation in Nigerian listed banks from 2011 to 2015. Altman Z-score and Beneish M-score and binary regression models were employed. The results revealed that bankruptcy threat does not significantly impact the probability of earnings manipulation in Nigerian listed banks. Ezejiofor and Okerekeoti's (2021) study investigated how the Altman model influenced the frequency of board meetings of 9 Nigerian deposit money banks from 2009 to 2019. The regression analysis revealed that the Altman bankruptcy predicting model has a positive and significant effect on the frequency of board meetings.

3. METHODOLOGY

Utilising quantitative techniques, the positivist concept is rigorously adhered to. From there, strategies are inferred. Using Google Forms, all replies are statistically measured. G-Power was used to find the minimum sample size required for this investigation. SMART PLS software was used to analyse the data.

This study utilised historical financial data and relevant indicators from 8 Nigerian Deposit Money Banks (DMBs) in the NSE between 2012 and 2021, the N25 Billion post–recitalisation era. This allowed for the systematic analysis and evaluation of the relationship between the CAMEL variables (capital adequacy, asset quality, management quality, earnings quality, and liquidity efficiency) and the likelihood of financial distress and bankruptcy.

The purposive sampling technique is employed because it allows for the deliberate selection of banks that meet specific criteria relevant to the research objectives. This technique ensures that the selected banks possess the financial data and characteristics required for the analysis.

The measurement of variables in this study is displayed in Table 1.

Table 1 Measurement of Variables

Abbreviations	Names of the Variables	Measure	Sources
ROA	Return on Assets	Return / Assets	Morales & Estrada (2010)
CAR	Capital Adequacy	Equity / Total Assets	Abdul Rahman & Masngut (2014)
AQR	Assets Quality	Total advance / Total deposit	Sahut & Mili (2011)
MER	Management Quality	Operating Expenses / Total asset	Li et. al (2011)
EQR	Earning Strength	Net Profit / Total Assets Ratio	Uhunmwangho (2022)
LR	Liquidity	Cash and Bank balances/ Total Asset	Muhmad & Hashim (2015)

Source: Author's Compilation (2023)

The study applied multiple discriminants (Z-score) techniques and censored logistic regression to capture CAMEL variables' associations and predictive power. The study used the Altman Model, given as Zeta 'Z'.

$$Z = 1.02X1 + 0.14X2 + 0.033X3 + 0.006X4 + 1.0X5 \tag{1}$$

Where:

Z = Overall index

X1 = Total equity/Total assets

X2 = Retained earnings/Total assets

X3 = Earnings before interests and taxes/Total assets

X4 = Market value of equity/Book value of total liabilities

X5 = Gross earnings/Total assets

However, this study focuses on CAMEL variables. Therefore, the above model was modified, and the Z-score was estimated as follows:

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 0.999X_5 \tag{2}$$

Where:

Z = Overall index

X1= Capital adequacy (Equity capital/Total assets)

X2 = Liquidity (Cash and bank balances/Total assets)

X3 = Asset quality (Deposit/Total assets)

X4 = Earnings (Profit after tax/Total assets)

X5 = Management quality (Operating expenses/Total assets

The Z-score index discriminates firms in the distress zone from the healthy ones. To this end, we used a cut-off rate of Z <2.68 for banks in distressed conditions and Z >2.68 for healthy banks. 2.68 in this study is the average of the Z-score of each bank divided by the number of years

investigated. To ascertain the effect of the CAMEL variables on bank financial health, the study followed Sahut and Mili's (2011) Logit model, stated thus:

$$P(Yi = 1) = 1/1 + e - Hi \tag{3}$$

Where Yi is the dependent variable with a value of 1 if the firm is distressed and 0 otherwise,

P is the probability function, and

$Hi = \emptyset0 + \sum \emptyset j Xijm$

j=1, where Xi is the explanatory variable for the firm and $\emptyset$ the parameters to be estimated.

This study used panel data and dummy variables, assigning 1 if the Z-score is <2.68 and 0 if otherwise. In the end, there were 63 observations of 44 distressed conditions and 19 healthy states. The need for censoring arises since all the banks are not in distress zones because they are still listed. Therefore, we run censored logistic regression. The relationship between the bank's financial health (regressand) and the explanatory variables is stated thus:

$$PODit = b0 + b1CAit + b2LQit + b3AQit + b4ENit + b5MQit + Uit \tag{4}$$

Where:

PODit is the dummy variable, which takes the value of 1 if the bank is in a distress zone and 0 otherwise (1 for Z-score <2.68 and 0 for Z-score >2.68). The regressand (POD in this study) is a dummy variable that discriminates between banks in distressed states and non-distressed conditions, which aligns with Sahut and Mili (2011).

CAit= capital adequacy (total debt/total assets) of firmi at time t

LQit= liquidity (total deposit/total assets) of firmi at time t

AQit = asset quality (Total advances/total deposit) of firmi at time t in line with Sahut and Mili (2011)

ENit = earnings (Net profit /total assets) of firmi at time t (see Jayadev, 2006)

MQit = management quality (total expenses/total assets) of firm i at time t. (Li et al, 2011) showed that

Successful banks have low expense-to-asset ratios.

b0 = intercept term, b1 - b5 are the coefficient of regression

U = error term

4. RESEARCH RESULTS

The dataset displayed in Table 2 shows multiple discriminant (Z-score) results. It revealed that 5 banks out of the 8 selected, i.e. (62.25%) of the banks investigated, are likely to experience distress shortly after urgent care is not taken, while 3 banks (37.75%) are in sound financial health. Specifically, First Bank, Access Bank, and Wema Bank Z-scores for the period under investigation were above the cut-off rate of 2.68 on average, while Unity Bank, Zenith Bank, FCMB, Fidelity Bank, and Union Bank are below the cut-off point during the period under investigation but at a stable status. However, Union Bank and Unity Bank appear to be the least sound during the study period, which may be attributed to low or negative earnings in some periods.

Table 2 Descriptive Results of (Z – Score) and the Health Status of the Investigated Banks

S/N	BANKS	CAR X1 *1.2	LQ X2 * 1.4	AQ X3 * 3.3	EN X4 * 0.6	MQ X5 * 0.999	Z-Score	Interpretation
1	Access Bank	0.1511	0.2339	2.37085	0.0107	0.096703	2.8633	Healthy
2	Fidelity Bank	0.1406	0.2335	2.11160	0.0071	0.043087	2.5358	Stable
3	First Bank	0.1429	0.2160	2.54080	0.0075	0.042947	2.9502	Healthy
4	FCMB	0.1190	0.1810	2.11824	0.0054	0.109131	2.5328	Stable
5	Union Bank	0.2171	0.1917	1.86094	0.0063	0.104908	2.3810	Stable
6	Unity Bank	-0.4796	0.1067	2.89179	-0.0038	0.081468	2.5966	Stable
7	Wema Bank	0.1756	0.1334	2.48408	0.0021	0.114056	2.9092	Healthy
8	Zenith Bank	0.1777	0.2345	2.18741	0.0182	0.040619	2.6585	Stable

Key: Healthy >2.68 Stable< 2. 68

Source: Author's' Computation (2023)

4.1 Capital Adequacy

Table 3 presents the computation of the banks' capital adequacy under investigation. The CBN provides that a minimum Capital Adequacy Ratio (CAR) of 15% will apply to all banks and banking groups with international authorisation and those that have been categorised by the CBN as being Domestic Systemically Important Banks (D-SIBs). A minimum CAR of 10% will apply to all other banks. The analysis shows that all except Unity Bank met the domestic systematically important banks requirement of 10% CAR. However, only 3 banks (38%) met the regulatory capital ratio of 15%, which applies to banks and banking groups with international authorisation. The analysis shows that Unity Bank has a negative 40% capital adequacy ratio, a key indicator of a going concern threat to the bank.

Table 3 Capital Adequacy

	Total Shareholders' Equity / Total Assets										
S/N	Banks	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Average
1	Access Bank	0.16	0.14	0.14	0.15	0.14	0.15	0.11	0.09	0.09	0.10	13%
2	Fidelity Bank	0.15	0.13	0.13	0.12	0.11	0.14	0.12	0.10	0.09	0.08	12%
3	First Bank	0.14	0.12	0.13	0.14	0.12	0.12	0.13	0.09	0.10	0.10	12%
4	FCMB	0.13	0.13	0.11	0.11	0.11	0.11	0.09	0.08	0.06	0.05	10%
5	Union Bank	0.17	0.21	0.23	0.23	0.22	0.24	0.15	0.14	0.12	0.10	18%
6	Unity Bank	0.31	0.07	0.18	0.19	0.17	-1.55	-1.35	-0.95	-0.56	-0.51	-40%
7	Wema Bank	0.01	0.13	0.11	0.12	0.12	0.13	0.11	0.08	0.61	0.06	15%
8	Zenith Bank	0.18	0.16	0.15	0.15	0.14	0.15	0.14	0.15	0.13	0.14	15%

Source: Researcher's Computation (2023)

4.2 Asset Quality

Table 4 displays the quality of the assets of the investigated banks. This ratio estimates the extent to which loan and advance assets are backed by the deposit collected. The indicative benchmark prescribed by the Reserve Bank of India (RBI) is at least 50%. The higher ratio indicates the sound position of the banks. The table shows that Union Bank has the least quality assets, 56%, followed by FCMB and Fidelity Bank at 64%. On the other hand, Unity Bank tops the rank with the highest asset quality at 88%.

Table 4 Asset Quality

		Deposit / Total Assets										
S/N	Banks	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Average
1	Access Bank	0.75	0.76	0.75	0.68	0.65	0.66	0.72	0.76	0.74	0.72	72%
2	Fidelity Bank	0.78	0.75	0.69	0.62	0.61	0.56	0.57	0.58	0.62	0.62	64%
3	First Bank	0.80	0.81	0.76	0.77	0.74	0.73	0.76	0.79	0.77	0.78	77%
4	FCMB	0.72	0.71	0.63	0.61	0.58	0.59	0.60	0.62	0.67	0.69	64%
5	Union Bank	0.56	0.53	0.58	0.59	0.60	0.62	0.65	0.47	0.52	0.52	56%
6	Unity Bank	0.68	0.75	0.67	0.49	0.63	1.89	1.45	0.88	0.72	0.60	88%
7	Wema Bank	0.71	0.67	0.69	0.72	0.76	0.73	0.77	0.82	0.83	0.82	75%
8	Zenith Bank	0.74	0.72	0.68	0.64	0.63	0.61	0.62	0.67	0.63	0.69	66%

Source: Researcher's Computation (2023)

4.3 Management Quality

Table 5 shows the analysis of management prudency with organisational resources. The results show that 37.75% of the investigated banks, comprising FCMB, Union Bank, and Wema Bank, have the highest operating expense to total assets ratio at 11%. Hence, the banks need to watch their expenses more closely. On the other hand, 37.75% of the investigated banks also have an operating to-total assets ratio (First Bank, Fidelity Bank, and Zenith Bank) at 4% ratio. These banks have shown continuous operating expenses reduction on a year-on-year basis.

Table 5 Management Quality

		Operating Expense / Total Assets										
S/N	Banks	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Average
1	Access Bank	0.05	0.19	0.09	0.10	0.08	0.10	0.09	0.08	0.07	0.06	9%
2	Fidelity Bank	0.06	0.05	0.05	0.05	0.03	0.05	0.04	0.04	0.03	0.03	4%
3	First Bank	0.06	0.05	0.05	0.05	0.05	0.05	0.00	0.05	0.04	0.04	4%
4	FCMB	0.11	0.11	0.11	0.12	0.14	0.13	0.11	0.10	0.09	0.08	11%
5	Union Bank	0.07	0.07	0.06	0.58	0.06	0.05	0.06	0.04	0.04	0.03	11%
6	Unity Bank	0.07	0.13	0.08	0.07	0.05	0.16	0.10	0.07	0.05	0.05	8%
7	Wema Bank	0.15	0.11	0.10	0.11	0.12	0.15	0.14	0.12	0.08	0.07	11%
8	Zenith Bank	0.05	0.06	0.05	0.04	0.04	0.04	0.03	0.03	0.03	0.03	4%

Source: Researcher's Computation (2023)

4.4 Earnings Quality

Table 6 focuses on the earnings ratio of the selected banks for the period. The research used an average of the earnings to the average total assets for the period (ROA). Hence, the results show that Zenith Bank tops the ranking at an average of 3%, followed by Access Bank with an average of 2%, while other banks trend at 1% except for Wema Bank and Unity Bank at 0% and -1%. This analysis further shows poor management of the operating expenses of the banks.

Table 6 Earning Strength

S/N	Banks	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Average
						Net Profit / Total Assets Ratio						
1	Access Bank	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.01	0.01	0.01	2%
2	Fidelity Bank	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	1%
3	First Bank	0.02	0.02	0.02	0.00	0.00	0.01	0.01	0.01	0.01	0.02	1%
4	FCMB	0.02	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	1%
5	Union Bank	0.00	0.00	0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	1%
6	Unity Bank	0.02	-0.06	0.03	0.01	0.00	-0.09	0.01	0.01	0.00	0.01	-1%
7	Wema Bank	-0.02	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0%
8	Zenith Bank	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	3%

Source: Researcher's Computation (2023)

4.5 Liquidity Efficiency

Table 7 shows the banks' liquidity by comparing the cash and bank balances to the banks' total assets. Hence, Unity Bank and Union Bank are the lowest, with 8% and 10 % liquidity ratios, respectively. On the other hand, Zenith Bank, Fidelity, and Access Bank have shown strong liquidity positions at 17%, which is the highest.

Table 7 Liquidity Efficiency

S/N	Banks	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Average
						Cash and Bank Balances / Total Asset						
1	Access Bank	0.17	0.24	0.20	0.18	0.20	0.23	0.15	0.10	0.08	0.11	17%
2	Fidelity Bank	0.13	0.19	0.22	0.15	0.16	0.20	0.22	0.21	0.12	0.07	17%
3	First Bank	0.10	0.16	0.17	0.18	0.15	0.12	0.12	0.17	0.21	0.18	15%
4	FCMB	0.14	0.20	0.11	0.16	0.09	0.09	0.13	0.13	0.11	0.15	13%
5	Union Bank	0.20	0.10	0.12	0.08	0.11	0.15	0.16	0.17	0.12	0.16	14%
6	Unity Bank	0.10	0.02	0.02	0.06	0.10	0.04	0.04	0.05	0.20	0.13	8%
7	Wema Bank	0.08	0.09	0.14	0.14	0.07	0.06	0.09	0.09	0.10	0.09	10%
8	Zenith Bank	0.13	0.19	0.20	0.19	0.14	0.17	0.16	0.15	0.19	0.16	17%

Source: Researcher's Computation (2023)

4.6 Test of Hypotheses

The results in Table 8 shows negative coefficient and P value of earnings quality as (β=-0.2481, p=-5.3306< .05), a negative coefficient and P value of asset quality as (β=-0. 6967, p=-3.34355< .05), a negative coefficient and P value of management quality (β=-.5366, p=-.6.4061< .05) which means that earnings, asset and management quality negatively and significantly impacts bank health status within the period under investigation. The liquidity efficiency and capital adequacy negatively but do not significantly impact the bank's health status within the period under investigation (β=-0.0060, p =-0.0195) and (β=-0.4268, p=-0.7872), respectively, which means there is an insignificant relationship between a firm's liquidity and capital adequacy and its likelihood of distress.

Table 8 Censored Logistic Regression Results

Dependent variable = POD (Dummy Variable)		
Independent Variables	Coefficient	Z. statistic
C	1.5371	6.3158(0.0000)*
CA	-0.4268	-0.7872(0.4311)
LQ	-0.0060	-0.0195(0.9845)
AQ	-0.6967	-3.4355(0.0000)*
EN	-0.2481	-5.3306(0.0000)*
MQ	-0.5366	-6.4061(0.0008)*

Convergence achieved after 7 iterations, * = significant at 0.01 % (Probability in parenthesis)
CA-Capital Adequacy, LQ-Liquidity Efficiency, AQ Asset Quality, EN-Earnings Quality, MQ-Management Quality
Source: Researcher's Estimation Using E-View 9.0 Software

To test the level of integration of the indicators incorporated in the model, the Wald test was applied to the regression output. The results are presented in Table 9.

Table 9 Wald Test Estimation Results

Statistics Tested	Value	Probability
T-Statistic	3.0174*	0.0038
F-Statistic	9.1048*	0.0038
Chi-square	9.1048*	0.0025

*= Significant at 5% level
Source: Researcher's Estimation with The Aid of E-View Software

The results in Table 9 revealed that the T-statistic, F-statistic, and chi-square are significant at 5%, signifying a significant level of integration of the indicators incorporated in the model on the relationship between CAMEL indicator analysis and prediction of financial distress of Nigerian banks.

5. CONCLUSION

The CAMEL variables negatively and significantly influence bank financial health, indicating that a boost in the indicators will help mitigate bank distress in Nigeria. Earnings quality indicates the likelihood of financial distress, consistent with Ikpesu and Eboiyehi (2018). Further, liquidity has an inverse relationship with financial distress. Elloumi and Gueyie (2001) also found similar results. The result implies that improving the banks' asset quality, management quality, and earnings could guard against and alleviate corporate financial distress in Nigeria. Timely provision of adequate financial information by bank managers with a sense of bank ownership would signal potential financial or corporate distress to all stakeholders. In line with the Stewardship Theory, management that devotes attention to the CAMEL indicators could guarantee bank stability and protect stakeholders' interests in Nigeria. The overall results support Sahut and Mili (2011), who identified CAMEL variables as important predictors and useful indicators of bank distress if appropriately applied. It is recommended that bank managers, considering themselves guardians of customer deposits, should devote more attention to managing their CAMEL indicators to avoid distress, especially the asset quality and liquidity ratios. Supervisory authorities should intensify surveillance and exercise regulatory discipline by

conducting a CAMEL analysis at least annually and advising banks that show unimpressive results on the remedial action to be taken immediately to nip bank failure in the bud.

The research methodology employed in this study could be extended to a larger data set or other non–financial sectors of the economy so that future researchers can reveal additional insights into the indicators of financial distress of corporate entities.

REFERENCES

Abdul Rahman, R., & Masngut, M. Y. (2014). The Use of 'CAMELS' In Detecting Financial Distress of Islamic Banks in Malaysia. *Journal of Applied Business Research, 30*(2), 445-452. https://doi.Org/0.19030/Jabr.V30i2.8416

Adolphus, J. T., & Jibaniya, K. D. (2021). Liquidity Management, Basel Capital Adequacy and Financial Distress Resolution in The Nigerian Banking Industry. *Journal of Finance and Accounting, 9*(4), 154-171. https://doi.Org/10.11648/J.Jfa.20210904.16

Ashamu, S. O. (2015). Determinants of Bank Distress and Its Effect on Nigerian Economy (1986-2013). *LASU Journal of Management Science, 2*(2), 195-228.

Babajide, A. A., Olokoyo, F. O., & Adegboye, F. B. (2015). Predicting Bank Failure in Nigeria: Using Survival Analysis Approach. *Journal of South African Business Research, 1*, 1-17. https://doi.Org/10.5171/2015.965940

Bongini, P., Claessens, S., & Ferri, G. (2001). The Political Economy of Distress in East Asian Financial Institutions. *Journal of Financial Services Research, 19*(1), 5-25. https://link.springer.com/article/10.1023/A:1011174316191

Central Bank of Nigeria (2019). *Annual Report and Statement of Accounts.* CBN. https://www.Cbn.Gov.Ng/Out/2020/RSD/CBN%202019%20ANNUAL%20REPORT-FINAL.Pdf

Donaldson, L., & Davis, J. H. (1991). Stewardship Theory or Agency Theory: CEO Governance and Shareholder Returns. *Australian Journal of Management*, *16*(1), 49-64. https://doi.Org/10.1177/0312896291016001

Ebhodaghe, J. U. (1997). *Concept and Activities of The Financial Services Regulation Coordinating Committee (FSRCC) in Nigeria.* Academy Press Plc Lagos.

Egbunike, P. A., & Igbinovia, I. M. (2018). Threat of Bankruptcy and Earnings Management in Nigerian Listed Banks*. Acta Universitatis Danubius, 14*(3), 238-252.

Elkhatim, A. M., & Salim, N. (2015). Prediction of Banks' Financial Distress. *SUST Journal of Engineering and Computer Sciences,16*(1), 40-55.

Elloumi, F., & Gueyie J. P. (2001). Financial Distress and Corporate Governance: An Empirical Analysis. *Corporate Governance, 1*(1), 15-23. https://doi.Org/10.1108/14720700110389548

Ezejiofor, R. A., & Okerekeoti, C. U. (2021). Altman Bankruptcy Prediction Model and Corporate Governance: An Empirical Study of Nigerian Banks. *International Journal of Trend in Scientific Research and Development, 5*(6), 159-171.

Ikpesu, F., & Eboiyehi, O. C. (2018). Capital Structure and Corporate Financial Distress of Manufacturing Firms in Nigeria. *Journal of Accounting and Taxation, 10*(7), 78-84. http://dx.doi.Org/10.5897/JAT2018.0309

Jardin, P., Veganzones, D., & Séverin, E. (2019). Forecasting Corporate Bankruptcy Using Accrual-Based Models*. Computational Economics*, *54*(1), 7-43. https://doi.Org/10.1007/S10614-017-9681-9

Jayadev, M. (2006). Predictive Power of Financial Risk Factors: An Empirical Analysis of Default Companies. *Vikalpa, 31*(3), 45-56. https://doi.Org/10.1177/0256090920060304

Kama, U. (2010). Banking Sector Crisis and Resolution Options in Nigeria. *CBN Bullion, 34*(1), 7-18.

Karugu, C., Achoki, G., & Kiriri, P. (2018). Capital Adequacy Ratios as Predictors of Financial Distress in Kenyan Commercial Banks*. Journal of Financial Risk Management, 7*, 278-289. https://doi.Org/10.4236/Jfrm.2018.73018

Kumar, V., & Kishore, M.P. (2019). Macroeconomic and Bank Specific Determinants of Non-Performing Loans in UAE Conventional Bank. *Journal of Banking and Finance Management, 2*(1), 1-12. Https://doi.org/10.22259/2642-9144.0201001

Li, G., Sanning, W. L., & Shaffer, S. (2011). Forecasting Bank Failure: Timeliness Versus Number of Failures. *Applied Economics Letters, 18*(16), 1549-1552. https://doi.org/10.1080/13504851.2010.548777

Morales, M., & Estrada, D. A. (2010). A Financial Stability Index for Colombia. *Annals of Finance, 6*, 555-581. https://doi.org/10.1007/S10436-010-0161-7

Muhmad, S. N., & Hashim, H. A. (2015). Using the Camel Framework in Assessing Bank Performance in Malaysia. *International Journal of Economics, Management and Accounting, 23*(1), 109-127. https://doi.org/10.31436/Ijema.V23i1.292

Nigeria Deposit Insurance Corporation (2011). *Resolution of Failing Banks Through the Establishment of Bridge Banks*. Press Briefing by Nigeria Deposit Insurance Corporation (NDIC).https://www.Cbn.Gov.Ng/Out/2011/Pressrelease/Gvd/NDIC%20PRESS%20RELEASE.Pdf

Ojo, T. A. (2015). *The Nigerian Maladapted Financial System: Reforming Task and Development Dilemma (1st Ed.)*. The CIBN Press Limited.

Olaniyi, T. A. (2007). Predicting Potential of Failure in Nigeria Banking Sector: A Comparative Analysis of First Bank Plc and Trade Bank Plc. *Babcock Journal of Management and Social Sciences, 6*(1), 64-76.

Olukotun, G. A., James, O. O., & Olurunfemi, K. (2013). Bank Distress in Nigeria and the Nigeria Deposit Insurance Corporation Intervention. *Global Journal of Management and Business Research Finance,13*(8), 51-60.

Pam, W. B. (2013). Bankruptcy in The Banking Sector of Nigeria. *International Journal of Finance and Accounting, 2*, 319-325. https://Api.Semanticscholar.Org/Corpusid:46148238

Rahman, Z., & Islam, S. (2018). Use of CAMEL Rating Framework: A Comparative Performance Evaluation of Selected Bangladeshi Private Commercial Banks. *International Journal of Economics and Finance, 10*(1), 120-128. https://doi.org/10.5539/Ijef.V10n1p120

Rostami, M. (2015). CAMELS' Analysis in Banking Industry. *Global Journal of Engineering Science and Research Management, 2*(11), 10-26.

Sahut, J., & Mili, M. (2011). Determinants of Banking Distress and Merger as Strategic Policy to Resolve Distress. *Economic Modeling, 281*(2), 138-146.

Soludo, C. C. (2004). *Consolidating the Nigerian Banking Industry to Meet Development Challenges of the 21st Century*. CBN Headquarter, Bankers' Committee, Abuja. Retrieved From https://Www.Cbn.Gov.Ng/Out/Speeches/2004/Govadd-6jul.Pdf

Uhunmwangho, M. (2022). CAMEL Indicators and The Financial Health of Selected Banks in Nigeria. *African Development Finance Journal, 4*(1), 1-12.

Unuafe, O. K., & Afolabi, M. A. (2014). Prediction of Bank Failure Using Camel and Market Information Comparative Appraisal of Some Selected Banks in Nigeria. *Research Journal of Finance and Accounting*, 5(3),1-17.

Uzokwe, N. J., & Ohaeri C. S. (2014). Distress in The Nigerian Banking Industry - Causes, Effects, And Strategies for Solution. *International Journal of Science Research, 3*(10), 76-81.