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Impact of Bank-Specific Factors on Capital Adequacy in the Nigerian Banking Sector: An Empirical Analysis

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Abstract
The study investigates the divergence between the capital adequacy of banks in Nigeria and the Bank for International Settlements' (BIS) global standards for bank capital adequacy. It specifically examines the factors affecting capital adequacy in Nigerian banks. The main objective is to evaluate how specific factors impact capital adequacy within this context. Data spanning from 2012 to 2022 from the Central Bank of Nigeria's Statistical Bulletin was collected for 13 selected deposit money banks in Nigeria. Econometric methods were employed to analyse this data. The findings indicate that asset quality and return on equity (ROE) adversely affect the capital adequacy of Nigerian deposit money banks during the study period. Conversely, bank liquidity, bank size, management efficiency, non-performing loans, and return on assets positively influence bank capital adequacy in Nigeria. It is recommended that particular attention be given to bank liquidity and bank size, as these factors significantly enhance the capital adequacy of Nigerian banks within the reviewed of period.
Key words*: Bank Liquidity, Bank Size, Management Efficiency, Non-performing Loans, Asset Quality, Capital Adequacy*

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I. Introduction

One of the primary objectives of regulatory and supervisory authorities within the global banking sector is to cultivate a robust financial system characterized by the size, strength, and resilience of financial institutions, which in turn supports economic growth and development within the country. Capital adequacy is a pivotal factor in achieving a sound financial system, serving as a measure of the ratio of an institution's primary capital to its assets, including loans and investments. This ratio underscores the financial strength and stability of institutions (Ashikhia & Sokefun, 2013). The adequacy of a bank's capital is determined by its ability to cover operational expenses, safeguard depositors' funds against total or partial loss in the event of liquidation, or absorb losses from non-performing liabilities (Onoh, 2002; Mbaeri, Uwalake, & Gimba, 2021). Banks with a strong capital base are better equipped to absorb losses arising from exposure to non-performing assets.

In the assessment of capital adequacy in banks, the Bank for International Settlements (BIS) under Basel II initially established standard requiring banks to maintain a capital base equivalent to eight (8) percent of their assets. Subsequently, in 2010, the BIS raised this requirement to 10.5 percent of a bank's risk-weighted assets (Abdul & Solomon, 2022).

In Nigeria, unique factors exist that influence capital adequacy measures, leading the Central Bank of Nigeria to establish a minimum capital base of N25 billion for deposit money banks. Specific determinants such as return on assets, bank size, liquidity, management efficiency, asset quality, non-performing loans, and earnings play critical roles in shaping capital adequacy in Nigerian banks, distinguishing them from the BIS standards for global capital adequacy (Abdul & Solomon, 2022). The Basel Accord, developed by the Basel Committee on Banking Supervision, represents a global effort to address banking sector fragility and crises experienced during the 1970s and 1980s. Initially formulated in 1988 as Basel I, subsequent iterations including Basel II and Basel III have since been established, each setting standards for the global regulation of bank capital adequacy.

Several academic studies, including those by Mbaeri et al. (2021), Ashikhia and Sokefun (2013), Mamoud Abdul (2017), Oyetayo, Osinubi, and Amaghionyeodiwe (2019), Yakubu and Egopija (2020), Salami, Uthman, and Sanni (2021), Akinuli, et al., (2024), Agu and Nwankwo (2019), among others, have focused on examining the relationship between capital adequacy and bank performance. However, these studies have generally overlooked the specific reasons behind the discrepancy between the Basel Committee on Banking

Supervision's recommended standards for capital adequacy and the actual capital adequacy levels observed in Nigerian banks. This study aims to address this gap by investigating the particular factors influencing capital adequacy in Nigerian banks, highlighting why these factors diverge from the capital adequacy standards prescribed by the Bank for International Settlements (BIS). Deposit money banks' capacity to extend credit to its potential customers is largely dependent on the sufficiency and adequacy of capital possessed by banks (Akinuli, et al., 2023).

II. Literature Review

2.1.1 Conceptual Review

According to Mbaeri, Uwaleke, and Gimba (2021), capital adequacy represents the necessary level of capital required by regulatory and supervisory authorities to ensure the financial health and stability of banks. This encompasses the sum of paid-up share capital and accumulated capital reserves within banks. It is the proportion of funds that banks must maintain to effectively conduct their primary operations, thereby preventing bank failures through the absorption of potential losses (Kishore, 2007). Solvency, reflecting a bank's capital adequacy, indicates its ability to support the risks inherent in its balance sheet. Capital adequacy serves as a safeguard against insolvency and potential liquidation resulting from risks encountered in the course of banking operations (Ashikhia & Sokefun, 2013). In practical terms, capital adequacy exists when a bank's adjusted capital is sufficient to absorb potential losses, cover fixed assets, meet operational requirements, and support future expansion (Central Bank of Nigeria, 2004). Rose et al. (2008) argue that bank capital is deemed adequate when it can sustain business operations, ensure safe and reliable services, maintain public confidence, and support the acquisition of necessary infrastructure for operational continuity. Torbira and Zaagha (2006) define bank capital as the sum total of paid-up share capital and accumulated reserves. Aliyu, Abdullahi, and Bakare (2020) posit that a bank's strength is gauged by its capital, assuring financial regulatory authorities that the bank is not vulnerable to threats or weaknesses indicative of distress, while also ensuring the safety of depositors' funds.

2.1.2 Theoretical Review

Capital Asset Pricing Model (CAPM)

The capital adequacy of a bank plays a critical role in ensuring its financial stability and is intricately linked to the regulatory framework of the banking industry. A robust theoretical framework that can effectively support the study of capital adequacy is the Capital Asset Pricing Model (CAPM). This model considers the risk and return associated with a bank's assets and liabilities, incorporating elements such as risk appetite, asset allocation, and leverage to determine the optimal level of capital adequacy necessary for sustained financial health. By leveraging the CAPM theory, banks can enhance their ability to evaluate and address their capital requirements, thereby bolstering their long-term viability in the market. Moreover, the CAPM offers regulators a structured approach to assessing and overseeing a bank's capital adequacy, which contributes to fostering a stable and secure financial system. The incorporation of the CAPM theory in analysing capital adequacy is essential for both banks and regulators alike, as it establishes a solid foundation for informed financial decision-making and effective risk management practices.

2.1.3 Empirical Review

There is a wealth of literature exploring capital adequacy across various contexts, timeframes, and locations. Mbaeri et al. (2021) emphasized the critical role of capital adequacy for bank stability, noting a positive relationship between the capital adequacy ratio and the return on capital employed by commercial banks. Similarly, Abba et al. (2018) analysed bank-specific determinants of the capital adequacy ratio using data from selected Deposit Money Banks (DMBs) in Nigeria, finding that return on assets (ROA) is a significant determinant surpassing the Basel Accord's recommended standards. In their study of bank-specific factors influencing capital adequacy of commercial banks in Nigeria, Torlagh, Jacob, Koko, and Bature (2023) highlighted the negative impact of non-performing loans on capital adequacy, with credit risk showing a negative but insignificant effect. Profitability was found to have a positive and significant influence on capital adequacy, whereas operational risk was deemed statistically insignificant (Ashikhia & Sokefun, 2013). Also, Ajao, Ajinaja, and Akinuli (2021) in their study on bank's peculiar variables on profit maximisation of deposit money banks in Nigeria using pool data of 13 banks to assess whether or not bank's specific factors influence bank's profitability in Nigeria. It was discovered that bank's size, asset quality, bank liquidity and capital adequacy immensely contribute to profitability of deposit banks in Nigeria within the period of review.

Sanyaolu, Alao, and Yunusa (2020) affirmed that capital adequacy fosters global bank stability, with return on assets and loans significantly related to capital adequacy, while non-performing loans and bank size exhibit negative relationships. Oyetayo et al. (2019) explored the impact of capital adequacy on bank performance in Nigeria, noting a positive and significant effect, contrasting with the negative impact of liquidity

on performance, illustrating a liquidity-profitability trade-off relationship. Yakubu and Egopija (2020) identified return on assets and return on equity as key determinants of bank financial performance, influenced by variables including capital adequacy ratio, liquidity ratio, credit risk ratio, bank size, and management quality. Salami et al. (2021) employed the CAMELS framework and other variables to predict Nigerian banks' financial soundness, demonstrating the significant predictive power of banks' specific variables on performance.

Agu and Nwankwo (2019) examined the effect of capital adequacy on commercial bank performance in Nigeria, highlighting the positive impact of loans and advances on net interest income. Aliyu, Abdullahi, and Bakare (2020) identified loans and advances as a determinant of capital adequacy, positively influencing the performance of deposit money banks with international authorization in Nigeria.

Abusharba et al. (2013) investigated capital adequacy determinants of Islamic banks in Indonesia, revealing a statistical relationship between capital adequacy and return on assets. Abdul and Solomon (2022) analyzed determinants of capital adequacy ratio among Nigerian banks, demonstrating significant positive effects of ROA, bank size, and loan-to-deposit ratio on capital adequacy. Olarewaju and Akande (2016) explored capital adequacy determinants in Nigeria's banking sector, finding direct relationships among equity to total assets, return on assets, and size, alongside inverse relationships involving credit risk, liquidity, and deposit. Oladejo and Adeyanju (2021) identified barriers to capital adequacy among Nigerian banks, including finance risk, growth barriers, negative operating results, non-performing loans, regulatory constraints, and inefficient management teams. These studies collectively provide comprehensive insights into the multifaceted aspects of capital adequacy, offering valuable implications for bank stability, risk management, and regulatory frameworks within the banking industry.

2.1.4 Study's gap

Arising from the literature review conducted on myriad studies in line with the tropical topic at hand, it has been ascertained that few works had been done in this area of study. Several authors investigated bank's specific factors and banks performance (Ajao, Ajinaja, and Akinuli, 2021; Aliyu, Abdullahi, and Bakare 2020; Agu and Nwankwo, 2019; Yakubu and Egopija, 2020; Ashikhia & Sokefun, 2013; Oladejo and Adeyanju, 2021; Akinuli et al., 2023). Very few touched the path of bank's specific factors and capital adequacy (Mbaeri et al., 2021; Abdul and Solomon, 2022; Torlagh, Jacob, Koko, and Bature, 2023). Hence, it would still be not out of place to investigate whether or not banks' specific factors contribute to capital adequacy and thus enrich literature review in this regard.

III. Methodology

3.1 Research Design

This study seeks to investigate the effect of bank's specific factors on capital adequacy in Nigeria. The study will rely on ex-post facto research design because the data to be used in evaluating the effect of bank's specific factors on capital adequacy in Nigeria cannot be manipulated or influenced in any way. Ex-post facto research design is suitable where research data are historical and non-manipulative.

3.2 Sources of Data

The data for this study shall be sourced from the Central Bank of Nigeria statistical bulletin, National Bureau of Statistics and Nigeria Stock Exchange Fact Book of various issues from 2012 up to 2022.

3.3 Population and Sources of Data

In order to achieve the objectives of this study, the population of this study comprises 13 deposit money banks that are licensed by the apex bank in Nigeria and listed on the Nigeria Stock Exchange (NSE) from the year 2000 up to 2023 constitute the population of the study. Nonetheless, since this study is based on annual aggregate data, hence, a census sampling technique where population equals sample size is adopted. Thus, all the quoted and licensed deposit money banks from 2012 to 2022 constitute the sample size of this study. The period is so chosen because it captured the major reforms and policies that had taken place in the financial sector and it will foster an in-depth study of banks' specific factors investigation and analysis in Nigeria as it affects capital adequacy.

3.4 Model Specification

The model for this study is specified in implicit form as thus below:

$CAR = f(Asset\_q, BS, BLiq, Mnange\_eff, NPL , ROA, ROE)$ …….(i)

In explicit form/or mathematical form, the model is stated as follows:

$$CAR_{it} = \beta_0 + \beta_1 Asset\_q_{it} + \beta_2 BS_{it} + \beta_3 BLiq_{it} + \beta_4 Manage\_eff_{it} + \beta_5 NPL_{it} + \beta_6 ROA_{it} + \beta_7 ROE_{it} + \varepsilon_{it} \text{ …….(ii)}$$

Where:

ROA = Return on Asset
CAR= Capital Adequacy
BS= Bank Size
BLiq = Bank Liquidity
Mamage_eff = Management Efficiency
Asset_q = Asset Quality
NPL = Non-performing Loan
ROE= Return on Earning
β_0 = Constant term
β_1, β_2, β_3, β_4, β_5, $\beta_6$and β_7, denote parameters to be estimated.
ε = The Error Term
i = cross-sectional variable (13 listed banks)
t = time series variable (Annual time series)

***APRIORI* EXPECTATION**

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7 > 0$

IV. DATA ANALYSIS AND INTERPRETATION OF RESULTS`

4.1 Unit Root Test

Non-stationary data produces bogus regression; hence the result may be misleading. Thus, it is mindful to establish the stationarity of data. This is carried out using the Augmented Dickey-Fuller (ADF) unit root test and Phillip-Perron (PP) unit root test. Most times, both ADF and PP unit root test produce the same result and often align. The decision rule is that the ADF and PP test statistic value must be greater than the Mackinnon critical value at 5% and at absolute value. Since the study at hand deals with balanced panel data, it is important to state the cross section and number of observations (OBS). Variables can be stationary at level or I(0), first difference or I(1) and second difference or I(2).The table below shows the summary of unit root test conducted on the parameters at all levels in a glance.

Unit Root Test: Table 1 *Unit root test (Intercept)*

Augmented Dickey-Fuller Test						**Phillip-Perron Test**			
Variable	**ADF Stat**	**Order**	**Remark**	**OBS**	**Cross section**	**Variable**	**ADF Stat**	**Order**	**Remark**
Asset_q	29.0273	1(0)	Non-Stationary	117	13	***Asset_q***	29.8699	1(0)	Non-Stationary
	79.6000**	1(1)	Stationary	113	13		100.227**	1(1)	Stationary
	127.337***	1(2)	Stationary	99	13		183.284***	I(2)	Stationary
BLiq	42.4624*	1(0)	Stationary	130	13	***BLiq***	50.1245*	1(0)	Stationary
	91.3141**	1(1)	Stationary	117	13		110.599**	1(1)	Stationary
	142.417***	1(2)	Stationary	104	13		211.075***	I(2)	Stationary
BS	28.7062	1(0)	Non-Stationary	128	13	***BS***	37.8543	1(0)	Non-Stationary
	76.5987**	1(1)	Stationary	114	13		146.925**	1(1)	Stationary
	117.658***	1(2)	Stationary	100	13		183.229***	I(2)	Stationary
CAR	38.6320	1(0)	Non Stationary	130	13	***CAR***	38.1023	1(0)	Non-Stationary
	86.0640**	1(1)	Stationary	117	13		113.707**	1(1)	Stationary
	129.653***	1(2)	Stationary	104	13		180.769***	I(2)	Stationary
Manage_eff	73.2990*	1(0)	Stationary	127	13	***Manage_eff***	81.0798*	1(0)	Stationary
	99.1714**	1(1)	Stationary	113	13		124.687**	1(1)	Stationary
	109.722***	1(2)	Stationary	99	13		182.363***	I(1)	Stationary
NPL	45.5810*	1(0)	Stationary	138	13	NPL	42.8641*	1(0)	Stationary
	101.805**	1(1)	Stationary	117	13		142.310**	1(1)	Stationary
	142.000***	1(2)	Stationary	104	13		229.597***	1(2)	Stationary
ROA	23.8919	1(0)	Non-Stationary	130	13	ROA	36.4141	1(0)	Non-Stationary
	72.5603**	1(1)	Stationary	117	13		112.066**	1(1)	Stationary
	101.560***	1(2)	Stationary	104	13		181.532***	1(2)	Stationary
ROE	36.4719	1(0)	Non-Stationary	130	13	ROE	36.4141	1(0)	Non-Stationary
	97.3480**	1(1)	Stationary	117	13		112.966**	1(1)	Stationary
	133.998***	1(2)	Stationary	104	13		181.552***	1(2)	Stationary

Source: Author's Computation using E-View 10.0 (2024)
****** Stationary at 2nd Diff **Stationary at 1st Diff. *Stationary at level***

Table I above indicates the result of unit root test using Augmented Dickey-Fuller (ADF) test and Phillip-Perron test. The results showed that asset quality of banks (Asset_q), bank size (BS), capital adequacy (CAR), return on earning (ROE) and return on asset (ROA) are not stationary at level or integrated order Zero, I(0). They became stationary after first difference or I(1) and second difference or I(2). Thus, bank liquidity (BLiq), management efficiency (Manage-eff) and non-performing loan (NPL) were the only variables that

became stationary at level. The above results also depicts that there are 13 cross sections which are the thirteen listed deposit money banks (DMBs) in Nigeria with varied observations.

4.2 Descriptive Statistics

Table II below showed the descriptive statistics of the parameters postulated in the model specified in this study. Descriptive statistics indicates whether or not the variables presented are adequate. In other words, it is statistics for testing the adequacy of parameters. The mean of the parameters for asset quality, bank liquidity, bank size, capital adequacy, management efficiency, non-performing loan, return on asset and return on earning are 3.4694, 20.3588, 84.8701, 19.00036, 0.5546, 10.6204, 3.3169 and 1.9718 respectively. Meanwhile, the median statistics for the same variables are 2.25000, 20.3790, 72.84500, 19.71000, 0.29000, 10.27000, 8.3650 and 0.92000 respectively. The standard deviations of the parameters are 3.1075, 4.2405, 40.6454, 5.65114, 0.543003, 3.573566, 5.5606 and 2.670008 respectively.

Table II: Descriptive statistics

	ASSET_Q	BLIQ	BS	CAR	MANAG_EFF	NPL	ROA	ROE
Mean	3.469493	20.35884	84.87015	19.00036	0.554638	10.62045	9.316964	1.971819
Median	2.250000	20.37500	72.84500	19.71000	0.290000	10.27000	8.365000	0.920000
Maximum	12.50000	29.60000	245.3500	36.10000	2.760000	22.38000	27.88000	12.50000
Minimum	0.030000	9.650000	9.230000	4.520000	0.060000	1.600000	0.540000	-0.010000
Std. Dev.	3.107529	4.240521	40.64545	5.650114	0.543003	3.573566	5.560659	2.670008
Skewness	0.913759	-0.147505	0.932121	0.231814	1.818618	0.612292	0.575325	2.014074
Kurtosis	2.781435	2.442637	4.147570	3.421733	5.802707	4.300666	2.882737	6.705329
Jarque-Bera	19.47865	2.286685	27.55580	2.258651	121.2368	18.35019	7.692037	172.2438
Probability	0.000059	0.318752	0.000001	0.323251	0.000000	0.000104	0.021365	0.000000
Sum	478.7900	2809.520	11712.08	2622.050	76.54000	1465.622	1285.741	272.1110
Sum Sq. Dev.	1322.973	2463.536	226331.2	4373.559	40.39483	1749.541	4236.167	976.6649
Observations	138	138	138	138	138	138	138	138

Sources: Author's Computation using E-View 10.0, (2024)

4.3 Results of Correlation coefficient

Correlation coefficient was used to evaluate the relationship between variables adopted and below is the result in table III.

Table III: Correlation Coefficient results for the variables

	ASSET_Q	BLIQ	BS	CAR	MANAG_EFF	NPL	ROA	ROE
ASSET_Q	1							
BLIQ	0.2505	1						
BS	-0.0932	0.1708	1					
CAR	-0.1244	0.1274	0.2554	1				
MANAG_EFF	-0.3342	-0.0644	0.0889	0.0373	1			
NPL	-0.2023	0.0147	-0.1216	-0.0009	-0.0275	1		
ROA	0.2678	0.4022	0.3458	0.1933	-0.1085	-0.0924	1	
ROE	-0.0537	0.0256	0.0581	-0.0056	0.0452	-0.0255	0.0420	1

Sources: Author's Computation using E-View 10.0 (2024)

Table III presented the result of correlation coefficient above. Capital adequacy (CAR) is the dependent variable while independent variables are asset quality (Asset_q), bank liquidity (BLiq), bank size (BS), management efficiency (Manage_eff), non-performing loans (NPL), return on asset (ROA), return on equity (ROE). The correlation coefficient test is conducted to assess the kind of relationships that exist among the variables and to ascertain whether or not there is the problem of multicollinearity.

From Table III above, capital adequacy has direct or positive relationship with bank liquidity, bank size, management efficiency and return on asset which are statistically given as 0.1274, 0.554, 0.0373 and 0.1933 respectively. On other hand, capital adequacy has an indirect or negative relationship with asset quality, non-performing loans, and return on equity with the following statistics results: -0.1244, -0.0009 and -0.0056 respectively. A look at this result indicates that none of the independent variables being used as proxies for banks' specific factors have a strong relationship with the dependent variable, capital adequacy, hence there is

absence of multicollinearity problem in the model postulated for this study. It should be noted that correlation coefficient could indicate either (strong) perfect negative relationship, -1 or (strong) perfect positive relationship, +1.

4.4 The Hausman Test

Table IV: The Hausman Test

Test Summary	Chi-Sq. Statistics	Chi-Sq. d.f.	Prob.
Cross-section random	14.820836	7	0.0384

Sources: Author's Computation using E-View 10.0, (2024)

From Table IV, the Hausman test is presented above. It is a test that points to the appropriate method of analysis to be used for the panel estimation. There are two methods – Random Effects and Fixed Effects Methods of panel regression analysis. The decision rule is that where probability of Hausman test > 5% (0.05), accept Random Effects method as the most suitable method for panel analysis. Where it is otherwise, reject Random Effect and the alternative hypothesis which is Fixed Effect method is accepted as the most suitable method for panel regression analysis. Here, the probability of Hausman Test is 0.0384< 0.05, hence, the appropriate method of estimation for the panel is Fixed Effect method.

4.5 Estimation Techniques:

Table V: Panel Regression Analysis using Fixed Effect Method

Dependent Variable: Capital Adequacy

Variables	Coefficient	Std. Error	t-statistics	Prob.
C	2.261382	0.195815	11.54857	0.0000
ASSET_Q	-0.027302	0.015459	-1.766121	0.0800
BLIQ	0.016894	0.007961	2.122081	0.0359
BS	0.003426	0.000962	3.561438	0.0005
MANAG_EFF	0.084561	0.061887	1.366380	0.1744
NPL	0.005128	0.008046	0.637345	0.5251
ROE	-0.009790	0.013187	-0.742395	0.4593
ROA	0.001271	0.006533	0.194563	0.8461
R-Squared=0.306930, F-statistics=2.750373, Prob(F-stat)=0.000458, Durbin-Watson Statistics=1.554117				

Source: Author's Computation using E-view 10.0 (2024)

4.5.1 Interpretation of Results and Implication of Findings

The analytical effect of banks' specific factors on the capital adequacy from Nigerian's experience would be discussed in turns.

There is an indirect relationship between asset quality and capital adequacy. One percent increase in asset quality will induce 0.027303 or (2.7303%) decrease in capital adequacy within the period of review. The result is not statistically significant with the probability of 0.0800 which is far above 5%. Also, this result is does not form with the *a priori* expectation as a positive relationship anticipated. This is a clear indication that banks have not been able to translation their assets quality to foster their capacity for capital adequacy and to maximize enough profit.

Meanwhile, bank liquidity (BLiq) has a direct relationship with return on capital adequcy (CAR). One percent increase in the banks' liquidity will stimulate 0.016894 or (1.6894%) increase in banks' capital adequacy within the period of review. It is worthwhile to note that the outcome of this finding is in line with the *a priori* expectation as a positive relationship is anticipated, the result is also statistically significant with the probability value of 0.0359. The implication of this result is that banks' liquidity can generate and boost profit maximization and result in capital adequacy in banks within the period of investigation.

Bank size and capital adequacy shared positive relationship. This connotes that a unit increase in the bank size will induce 0.003426 or (0.3426%). The result is statistically significant with the probability value of 0.0005 which is even significant at 1%. Moreover, the outcome of this finding aligns with the *a priori* expectation as a positive relationship is anticipated. The economic implication of this result is implies that banks' size has a capacity to enhance capital adequacy in banks and thus foster multiplier effect on profit maximization of banks. Thus, banks should consider it appropriate to spread to the unbanked areas of the economy with a view of increasing their capacity to boost capital adequacy and generate profit.

Looking at capital adequacy and return on asset, there is a direct relationship between CAR and ROA. One percent increase in the return on asset will lead to 0.001271 or (0.1271%) boost in capital adequacy within the period of review. The result is statistically insignificant with the probability value of 0.8461 which is far above 5%. The result is also in line with the *a priori* expectation.

Capital adequacy and management efficiency shared a positive relationship. This connotes that one percent increase in the management efficiency will stimulate 0.084561 or (8.4561%) increase in banks' capital adequacy within the period of review. Although the result is in line *a priori* expectation, it is not statistically significant with the P-value of 0.1744. The policy implication of this finding is that management efficiency could contribute to banks' capital adequacy. Thus, management efforts in growing banks profit and capital adequacy should not be compromised nor abused.

Non-performing loan and capital adequacy also share a direct relationship. It means one percent increase in the non-performing loan will stimulate 0.005128 or (0.5128%) boost in banks' capital adequacy. The result is not statistically significant with the probability value of 0.5252 which is in excess of 5%. The economic implication of this result is that should mobilize efforts to reduce the level of non-performing loans, to manage their credit risk more efficiently and give credit to worthwhile customers.

The return on earning has an indirect relationship with the capital adequacy. One percent increase in the return on earning will stimulate 0.009790 or (0.9790%) decline in capital adequacy in banks. The result is statistically insignificant with the P-value of 0.4593 which is in excess of 5%. Thus, the implication of this finding is that more capital reserves and profits should be set aside to forestall the act of diluting shareholders equity and it will reduce the constant move to the secondary market with view of raising funds from the market.

4.5.2 Interpretation of Statistical Properties

The coefficient of determination (R-Squared) of 0.3069 indicates that the explanatory variables are able to give about 30.69% information as regards variation in the capital adequacy in banks from Nigerian experience. Although the determinant of coefficient might be relatively below average, the result does not indicate that model is not 'fit'. This is because the result of Durbin-Watson statistics attest to this fact. DW test of 1.554117 depicts that the result might not suffer from serial autocorrelation problem. It also measures the "goodness of fit" of the model specified in this study.

The F-statistics implies that the entire analysis is fit and significant with the probability value of 0.000458.

V. Conclusion and Recommendations

Based on the findings of this study, it is evident that certain specific factors significantly impact the capital adequacy of deposit money banks in Nigeria, particularly banks' liquidity and size. The panel regression analysis revealed that banks' size and liquidity have substantial effects on capital adequacy over the review period. It is therefore crucial for management and stakeholders to prioritize these fundamental bank variables, which play a critical role in both capital adequacy and profit maximization within the Nigerian banking system. These factors also contribute to explaining the differences between the Basel Committee's capital adequacy standards and the actual capital adequacy ratios observed in Nigerian banks.

Policy recommendations stemming from these findings emphasize the importance of effectively managing banks' specific factors to promote growth and enhance competitiveness in line with international standards set by the Bank for International Settlements (BIS). Proper asset management is essential for boosting profitability and ensuring the bank's sustainability, as banks must cover their operational costs to remain viable in the commercial banking sector. Effective liquidity management is also essential for enhancing bank performance, strengthening capital adequacy, and ensuring overall financial soundness and viability in the current banking landscape.

Furthermore, the study suggests exploring exogenous factors that influence capital adequacy in Nigerian banks, along with industry-specific variables such as profit-loss ratio, underwriting practices, bank age, leverage, asset tangibility, growth indicators, and premium growth. Critical examination of these factors will provide deeper insights into optimizing capital adequacy and maximizing profitability among deposit money banks in Nigeria. By addressing and understanding these multifaceted influences, banks can better navigate challenges and capitalize on opportunities for sustained growth and stability.

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