International Journal of Research in Finance and Management

P-ISSN: 2617-5754
E-ISSN: 2617-5762
IJRFM 2023; 6(1): 188-196
www.allfinancejournal.com
Received: 01-12-2022
Accepted: 06-01-2023

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Non performing loans and profitability of selected deposit money banks in Nigeria (2008-2021)

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DOI: https://doi.org/10.33545/26175754.2023.v6.i1c.209

Abstract
This study examined non-performing loans and profitability of selected Deposit Money Banks in Nigeria. There has been increasing scholarly debates on the direction of policy to effectively ensure the performance of the banking sector. Whilst some scholars have argued that bank profitability is enhanced by minimizing non-performing loans, others argue that government policies and other factors are integral to the profitability of banks. Doubtful assets, sub-standard assets and losses were used as proxies for non-performing loans while return on equity, return on assets and net interest margin were used as proxies for banks profitability. The specific objective of the study is to assess the relationship between sub-standard assets and return on assets of selected Deposit Money banks in Nigeria and to evaluate the relationship between doubtful assets and return on equity of selected Deposit Money banks in Nigeria. Data were obtained from annual accounts of selected banks. In pursuance of the objectives of this study, three hypotheses were formulated and tested using Ordinary Least Square regression analysis. The study found out that there is a significant relationship between Sub-standard assets and Return on asset; there is a significant relationship between Doubtful asset and Return on equity and that there is a significant relationship between Loss assets and bank's net interest margin of selected Deposit Money Banks in Nigeria at 5% level of significance. The study recommended that there is need for banks in Nigeria to comprehensively engage investors and their customers during loan extension and appraisal to ensure profitability. Banks should actually praticalize the C's of lending, which has to do with character, credit-worthiness, collateral, capacity etc. before administering loan to investors or customers in order to minimize doubtful loans and losses.

Keywords: Loans, losses, distress, liquidity, asset quality, profitability

1. Introduction
Nonperforming loans are those risk assets not generating income. As a first step, loans are often considered to be nonperforming when principal or interest on them is due and left unpaid for 90 days or more. Loan classification and provisioning entails much more than simply looking at amounts overdue. The borrowers' cash-flow and overall ability to repay amounts owing are significantly more important than whether the loan is overdue or not. For financial reporting purposes, the principal balance outstanding rather than delinquent payments is used to identify a nonperforming loan portfolio. The nonperforming loan portfolio is an indication of the quality of the total portfolio and ultimately that of a bank's lending decisions. There can be a number of reasons to explain deterioration in loan portfolio quality. It is unavoidable that banks make mistakes in judgment. However, for most failed banks, the real problems are systemic in nature and rooted in a bank's credit culture and management style.

According to McNaughton and Dietz (2018), although banks initially emerged as deposit takers, they soon matured into intermediators of funds, thereby assuming credit risk. Credit became "the business of banking, and the primary basis on which a bank's quality and performance are judged. Measures to counteract these risks normally comprise clearly defined policies that express the bank's credit risk management philosophy and the parameters within which credit risk is to controlled. Specific credit risk management measures typically include three kinds of policies. One set of policies includes those aimed to limit or reduce credit risk, such as policies on concentration and large exposures, adequate diversification, lending to connected parties or over-exposures.

Banks are susceptible to many risks including credit risk that usually brings about nonperforming loans. Credit crystallizes when loans and other advances become nonperforming and almost irrecoverable. During the financial crises of the late 1980s, 1990s and beyond, many banks collapsed mainly due to huge nonperforming loans indicating that nonperforming loans portfolio is rather a sign of pending bank failure than a pointer to bank profitability.

Aburime (2012) [6] stated that in1993 insolvent banks accounted for about 20 percent of banking system assets and about 22 percent of deposits. In 1995 almost half of the banks reported being in financial distress, during which about 25 banks were liquidated as a result of nonperforming loans portfolio.

The implication of nonperforming loan portfolio and negative bank profit can be traced to insider abuse, compromise of sound credit risk procedures, overtrading, incompetence, complacency, inadequate supervision, among other shortcomings of corporate governance. The central bank of Nigeria bailed some banks in the past due to poor performance majorly brought by NPLs. The problem of rising NPL may be attributed to inadequate or weak monitoring, controls and supervision on the part of banks, weaknesses of legal infrastructure, lack of effective lenders' recourse and poor debt recovery strategies (Adhikary, 2006) [54].

Authors such as Okonkwo (2016) [42], concluded that Non-performing loans are the major factors that affect bank profitability while Woo, (2013) [53] and (2011) maintained that poor corporate governance, inadequate capitalization and government inconsistent policies are the major factors that affect bank profitability. This disagreement amongst these authors necessitated the choice of this topic. The author intend to add return on equity, return on asset and net profit margin as proxies for bank profitability inorder to ensure a comprehensive study.

1.1 Objectives of the Study

The broad objective of this study is to examine the relationship between non-performing assets and profitability of Selected Banks. Specifically, the study intends to;

1. Examine the relationship between sub-standard assets and return on assets of selected Deposit Money Banks in Nigeria.
2. Evaluate the relationship between doubtful assets and return on equity of selected Deposit Money Banks in Nigeria.
3. Determine the relationship between loss assets and Net Interest Margin of selected Deposit Money Banks in Nigeria.

1.2 Hypotheses

The following null hypotheses are formulated to guide the study. They include:

$H0_1$: There is no significant relationship between sub-standard assets and return on assets of selected Deposit Money Banks in Nigeria.

$H0_2$: There is no significant relationship between doubtful assets and return on equity of selected Deposit Money Banks in Nigeria.

$H0_3$: There is no significant relationship between loss assets and Net Interest Margin of selected Deposit Money Banks Niger

2. Materials and Methods

Conceptually, Non-Performing Loans or Asset (NPL) can be classified according to Mackay (2018) [37] into three categories *viz*: Sub-standard Assets, Doubtful Assets and Loss Assets based on the time period for which the asset remained non- performing and overdue.

Loans given by a bank to its customers which does not guarantee prompt payment of interest or which defaults in its scheduled payments are known as sub- standard assets. These are so named because they have failed to adhere to the repayment schedule. Doubtful assets are those kinds of assets which have remained Non-performing assets for a duration of time exceeding 12 months; whereas loss assets are those where loss has been identified by the bank, or an internal or an external auditor or central bank inspectors.

According to Okra & Sunshen (2018) [44], all loans immediately after disbursements are classified as standard assets i.e. good loans and unfortunately overtime, some of them turn bad and doubtful, forcing the banks to classify those advances as NPA. The reasons are many. Mostly, the borrowers turn as defaulters, either intentionally or due to compulsion of circumstances beyond their control. Sometimes, even the banks' action or inaction leads to failure of borrower's business. But in most cases, borrowers fail for reasons beyond their control.

2.1 Non-Performing Loans and Profitability

Profitability of the banking sector is a subject that has received a lot of attention in recent years and there is now a large literature which has examined the role played by management of resources in determining bank profitability. Indicators used to measure profitability are many and includes Return on Assets, Return on Equity and Net Interest Margin. There are however divergent views among scholars on the superiority of one indicator over the others as a good measure of profitability.

2.2 Return on Equity (ROE)

Return on equity (ROE) is a measure of financial performance calculated by dividing net income by shareholders' equity since shareholders' equity is equal to a company's assets minus its debt. ROE is considered the return on net assets.

ROE is considered a gauge of a corporation's profitability and how efficient it is in generating profits. The higher the ROE, the more efficient a company's management is at generating income and growth from its equity financing. Abdullah (2020) [1] explains that sustainable growth rates and dividend growth rates can be estimated using ROE, assuming that the ratio is roughly in line or just above its peer group average. Although there may be some challenges. ROE can be a good starting place for developing future estimates of a stock's growth rate and the growth rate of its dividends. These two calculations are functions of each other and can be used to make an easier comparison between similar companies.

$$\text{Return on Equity} = \frac{\text{Average Shareholders' Equity}}{\text{Net Income}}$$

2.3 Return on Assets (ROA)

According to Ejigbo (2021), return on assets (ROA) refers to a financial ratio that indicates how profitable a company is in relation to its total assets. Corporate management, analysts, and investors can use ROA to determine how efficiently a company uses its assets to generate a profit.

The metric is commonly expressed as a percentage by using a company's net income and its average assets. A higher ROA means a company is more efficient and productive at managing its balance sheet to generate profits while a lower ROA indicates there is room for improvement.

$$\text{ROA} = \frac{\text{Net income}}{\text{Total Asset}}$$

2.4 Net Interest Margin (NIM)

Oluoha (2020) defines Net Interest Margin (NIM) as a measurement comparing the net interest income a financial firm generates from credit products like loans and mortgages, with the outgoing interest it pays holders of savings accounts and certificates of deposit (CDs). Expressed as a percentage, the NIM is a profitability indicator that approximates the likelihood of a bank or investment firm thriving over the long haul. This metric helps prospective investors determine whether or not to invest in a given financial services firm by providing visibility into the profitability of their interest income versus their interest expenses.

Simply put: a positive net interest margin suggests that an entity operates profitably, while a negative figure implies investment inefficiency. In the latter scenario, a firm may take corrective action by applying funds toward outstanding debt or shifting those assets towards more profitable investments.

Empirical evidence by Bourke (2018) [55] indicates banks that hold a high level of equity relative to their assets perform better in terms of profitability. These studies suggest that as bank's capital ratios increase, the cost of funding tend to fall due to lower prospective bankruptcy costs. Furthermore, overhead costs are also an important determinant of profitability: the higher the overhead costs in relation to the assets, the lower the profitability of a bank.

To measure the effects of market structure or industry related effects on bank profitability, the structure-conduct performance (market- power) hypothesis states that increased market power yields monopoly profits. According to the results of Bourke (2018) [55] the bank concentration ratio shows a positive and statistically significant relationship with the profitability of a bank and is, therefore, consistent with the traditional structure-conduct-performance paradigm.

Molyneux and Thornton (2019) in the study on the determinants of bank profitability use a sample of 18 European countries during the period 1986-1989. They found a significant positive association between the return on equity and the level of interest rates in each country, bank concentration and government ownership.

Bourke (2016) [56] among others, found a negative and significant relationship between the level of risk and profitability. This result might reflect the fact that financial institutions that are exposed to high- risk loans also have a higher accumulation of unpaid loans. These loan losses lower the returns of the affected banks.

In a study of United States banks for the period 1989–1993, Angbazo (1997) [57] found that net interest margins reflect primarily credit and macroeconomic risk. In addition, there is evidence that net interest margins are positively related to core capital, non-interest-bearing reserves, and management quality, but negatively related to liquidity risk.

The study of Demirguc-Kunt and Huizinga (2019) [58] reported that taxation reduces b a n k profitability. In contrast, the results of Demirguc-Kunt and Huizinga (2013) [59] indicate a negative but statistically insignificant relationship between bank concentration and bank profits. Research on the determinants of bank profitability has focused on both the returns on bank assets and equity, and net interest rate margins.

Saunders and Schumacher (2016) applied the model of Ho to analyze the determinants of interest margins in six countries of the European Union and the US during the period 1988–95. They found that macroeconomic volatility and regulations have a significant impact on bank interest rate margins. Their empirical evidence supports an important trade-off between ensuring bank solvency, as defined by high capital to asset ratios, and lowering the cost of financial services to consumers, as measured by low interest rate margins.

Naceur and Goaied (2016) studied the performance of Tunisian deposit banks (1980-95), and observed that productivity change, market net interest margin, and bank portfolio composition are significant and positively related to return on assets, but not the size of the bank. In the same vein, using co-integration techniques, Chirwa (2013) [60] studied eight banks in Malawi (1970-84) and found a significantly positive long run relationship between concentration and performance; similarly, for demand deposits.

Abreu and Mendes (2012) [3] investigated the determinants of banks' interest margins and profitability for some European countries noting that well capitalized-banks face lower expected bankruptcy costs and this advantage "translate" into better profitability. The macroeconomic variables employed in the study; unemployment rate show a negative but significant relationship, while inflation rate is observed to be a relevant factor in explaining bank profitability.

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Abreu and Mendes (2018) [5], who examined banks in Portugal, Spain, France and Germany, found that the loans-to-assets ratio, as a proxy for risk, has a positive impact on the profitability of a bank.

Goddard and Posky (2014) [19] studied the performance of European banks across six countries. They found a relatively weak relationship between size and profitability - measured by return on equity. Only banks in the United

Kingdom show a significantly positive relationship between off-balance-sheet business and profitability. Even though competition among banks is thought to have increased over the period, there is significant persistence of cumulative abnormal profit for the period, 1992-1998.

Awoyemi (2014) [61] also analyzed the effects of Credit Risk Management on the performance of Deposit Money Banks in Nigeria. In the regression model, ROE and ROA were used as indicators of performance while NPLs and Capital Adequacy Ratio (CAR) were used as credit risk management proxies. The study collected data from annual reports of seven Deposit Money Banks for seven years beginning 2005 to 2011. From panel regression model, it was established that credit risk management practices have a statistically significant effect on the profits of Deposit Money Banks operating in Nigeria. Most studies have shown a positive relationship between inflation, central bank interest rates, GDP growth, and bank profitability. Nevertheless, there is some evidence that the legal and institutional characteristics of a country matter.

2.5 Gap in Literature

It is widely believed that increase in non-performing assets will definitely impede on the growth of deposit money banks and can lead to bank failure if not properly checked. This study deviated from the views of other authors by introducing Net Interest Margin as one of the variables used in determining bank profitability since it is a popular profitability ratio used by banks, which helps them determine the success of firms in investing in comparison to the expenses on the same investments and is calculated as Investment income minus interest expenses. The study equally bridged the lacuna noticed by extending this research to 2021 inorder to effectively discuss elaborately more relationship between the dependent and the independent variables and also to create more awareness as regards to non-performing assets

3. Research Design

This study made use of *Ex-Post Facto* research design. It is the type of research involving events that have already taken place and for which data already exists, and the researcher is merely involved in data gathering. The aim of a research design is to ensure that the overall strategy chosen to integrate the different components of the study address the research problem as unambiguously as possible. It is a kind of format which the researcher uses in order to systematically apply a scientific method in the investigation of problems (Onwumere, 2009) [62]. It compares two or more groups of variables with similar backgrounds that are exposed to different conditions as a result of their natural histories (Lammers & Badia, 2005) [63]. The justification for the adoption of this research design hinges on the unmanipulatibility of data and the intention of the researcher to determine the relationship between nonperforming assets and banks profitability.

3.1 Sources of Data

This study basically made use of secondary data. The data for return on asset, return on equity, Net Interest Margin and non-performing assets were obtained from Annual Accounts of Union Bank of Nigeria PLC, Unity Bank PLC and Polaris Bank PLC.

3.2 Population and Sample

The Population of the study is the three Deposit money banks conveniently selected because of their huge non-performing Assets. The three banks were later bailed by Asset Management Company of Nigeria (AMCON). They are Union Bank of Nigeria PLC, Unity Bank PLC and Polaris Bank PLC.

3.3 Model Specification

The three models were specified as follows:

$ROA = \beta_0 + \beta_1 SUB + \mu$

$ROE = \beta_0 + \beta_1 DOU + \mu$

$NIM = \beta_0 + \beta_1 LOS + \mu$

Where:

SUB = Substandard assets (to RGDP)
ROA = Return on assets
DOU = Doubtful Return on equity
LOS = Loss assets
NIM = Net Interest Margin
β_0 = Constant term (intercept)
β_1 = Coefficient of Macroeconomic Variables
μ = Error term (Stochastic Term)

4. Data Presentation

The time series data obtained from the publications and annual Accounts of Selected Banks. The Banks include: Union Bank of Nigeria PLC, UNITY Bank Ltd and Polaris Bank Ltd (2008-2021). It is presented in table 1below:

Table 1: Operational variables

Bank	Year	Return on Equity (%)	Return on Asset (%)	Net interest Margin (%)	Sub-standard Assets (Nm)	Doubtful Assets (Nm)	Losses (Nm)
UNION	2008	7.44	0.80	1.8	763,300	678,980	834,678
UNITY	2008	6.98	1.07	8.4	655,211	689,987	654,821
POLARIS	2008	4.62	0.15	2.4	854,673	765,856	633,654
UNION	2009	3.41	0.08	3.3	745,678	732,678	436,253
UNITY	2009	1.55	2.14	1.88	654,789	469,879	325,678
POLARIS	2009	0.93	0.12	0.6	568,787	654,782	667,897
UNION	2010	2.87	2.84	7.88	457,389	543,768	753,325
UNITY	2010	2.89	2.81	1.7	567,890	655,777	654,367
POLARIS	2010	22.59	4.10	0.7	678,980	555,657	745,678
UNION	2011	(28)	2.3	8.9	689,987	543,876	654,789
UNITY	2011	3.78	4.19	5.7	765,856	544,812	568,787

POLARIS	2011	1.51	2.20	1.6	732,678	444,876	457,389
UNION	2012	1.8	0.4	7.9	469,879	543,678	534,333
UNITY	2012	25.9	29.9	0.6	654,782	399,456	567,876
POLARIS	2012	1.50	2.17	0.4	543,768	675,543	334,897
UNION	2013	2.8	0.5	9.5	834,678	543,654	378,372
UNITY	2013	9.12	2.57	3.6	654,821	763,300	655,777
POLARIS	2013	4.48	5.26	1.9	633,654	655,211	555,657
UNION	2014	10.4	2.3	9.0	436,253	854,673	543,876
UNITY	2014	1.50	2.17	1.6	325,678	745,678	544,812
POLARIS	2014	9.61	1.4	0.6	667,897	654,789	444,876
UNION	2015	8.1	1.8	9.0	753,325	568,787	543,678
UNITY	2015	6.11	0.93	5.6	654,367	457,389	657,354
POLARIS	2015	1.61	3.34	1.1	655,777	534,333	434,335
UNION	2016	5.58	1.19	9.4	555,657	567,876	356,765
UNITY	2016	5.44	1.16	2.6	543,876	334,897	436,872
POLARIS	2016	7.91	1.38	5.7	544,812	378,372	534,333
UNION	2017	6.2	1.0	7.8	444,876	456,387	567,876
UNITY	2017	5.98	1.06	3.5	543,678	834,678	334,897
POLARIS	2017	0.52	0.15	1.7	399,456	654,821	378,372
UNION	2018	9.6	1.3	6.6	675,543	633,654	456,387
UNITY	2018	12.65	2.34	1.6	543,654	436,253	655,777
POLARIS	2018	8.97	2.61	1.7	532,698	325,678	555,657
UNION	2019	0.38	2.95	6.3	643,876	667,897	543,876
UNITY	2019	8.97	2.61	0.5	734,879	673,234	544,812
POLARIS	2019	33	2.4	9.8	657,354	554,782	567,897
UNION	2020	5.64	3.06	3.5	434,335	467,478	552,675
UNITY	2020	3.73	2.41	4.6	356,765	665,876	654,234
POLARIS	2020	9.4	2.4	5.6	436,872	564,788	854,678
UNION	2021	8.75	2.21	4.6	534,333	665,543	566,243
UNITY	2021	3.73	2.41	6.1	567,876	564,324	854,986
POLARIS	2021	7.43	0.27	2.4	531,698	625,678	755,657

***Source*:** Annual Accounts of Selected Banks (Various years)

4.1 Test of Reliability

The researcher tested for stationarity unit root test in order to fulfill the economic theory which states that variables that must enter a regression model must undergo a stationarity test in order to achieve a realistic (non-spurious) result at 1%, 5% or 10% level of significance. The result for the test is shown below in table 2.

The data used in this study had unit root problem, consequently, the data were detrended using Augmented Dickey-Fuller Test. The result of the differenced data in order to solve the unit root problem is shown in table 2.

Table 2: Differenced Result

Variables	Test Statistic	Test Critical Values			Status	Prob.
	ADF	1% level	5% level	10% level	Stationary	
ROE	-7.760730	-3.646342	-2.954021	-2.615817	1(1)	0.0000
ROA	-9.701251	-3.646342	-2.954021	-2.615817	1(1)	0.0000
NIM	-8.950262	-3.646342	-2.954021	-2.615817	1(1)	0.0000
SUB	-10.62541	-3.646342	-2.954021	-2.615817	1(1)	0.0000
DOU	-4.573769	-3.679322	-2.967767	-2.622989	1(1)	0.0011
LOSS	-5.8975643	-3.897543	-2.968765	-2.627876	1(1)	0.0000

Source: Researcher's computation using E-view 11.0,

Table 3: Correlation Matrix

	ROE	ROA	NIM	SUB	DOU
ROE	1.0000	0.4765	0.9570	0.1890	0.3588
ROA	0.4765	1.0000	0.4082	0.4185	0.5614
NIM	0.9570	0.4082	1.0000	0.1293	0.4090
SUB	0.1890	0.4185	0.1293	1.0000	0.1605
DOU	0.3588	0.5614	0.4090	0.1605	0.4500

LOSS 0.4567 0.5678 0.4123 0.2145 1.0000

***Source*:** Researcher's computation using E-view 11.0

4.2 Interpretation of Correlation Matrix

The correlation matrix result in table 3 shows that Non-performing assets proxied by sub-standard assets, Doubtful assets and losses are positively correlated with Banks profitability as proxied by return on equity, return on assets and net interest margin.

4.3 Test of Hypotheses

Test of Hypothesis I

Ho: There is no significant relationship between substandard assets and return on assets of selected Deposit Money Banks in Nigeria.

H_1: There is a significant relationship between substandard assets and return on assets of selected Deposit Money banks in Nigeria.

4.4 Decision Rule
Accept the alternative hypothesis, if the P-value of the test is less than 0.05. Otherwise accept null hypothesis.

Table 4: OLS (Simple Regression) Analysis testing the relationship between SUB and ROA

Dependent Variable: ROA				
Method: Least Squares				
Date: 03/8/23 Time: 11:53				
Sample (adjusted): 2008 2021				
Included observations: 14 after adjustments				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	-0.023704	0.150784	-0.157205	0.8760
SUB	-0.012671	0.009844	4.287217	0.0070
R-squared	0.470809	Mean dependent var		-0.016000
Adjusted R-squared	0.218955	S.D. dependent var		0.899916
S.E. of regression	0.891346	Akaike info criterion		-9.663277
Sum squared resid	26.21841	Schwarz criterion		-9.752154
Log likelihood	44.60734	Hannan-Quinn criter.		-9.693957
F-statistic	10.65928	Durbin-Watson stat		1.145182
Prob(F-statistic)	0.006974			

Source: Researcher's computation using E- View 11.0

4.5 Interpretation of Regression (OLS) Result 1
The regressed coefficient correlation result in table 4 shows the existence of a statistically significant relationship between SUB ($\beta_{1=}$ -0.012671) and ROA at 5% significant level. The probability value for the slope coefficient shows that P(x_1=0.0070<0.05). This implies that SUB has a statistically significant relationship with ROA at 5% significance level although the significance is negative.

The coefficient of determination obtained is 0.47 (47%), which is commonly referred to as the value of R^2. The cumulative test of hypothesis using R^2 to draw statistical inference about the explanatory variables employed in this regression equation, shows that the R-Squared value shows that 47% of the systematic variations in the dependant variable can be jointly predicted by the independent variable (SUB) while 53% was explained by unknown variables that were not included in the model. The Durbin-Watson statistic of 1.145182 indicates that there is no auto-correlation problem. The overall significance of the model Prob F-statistic (0.006974) is statistically significant at 5%.

Consequently, since the P-value of SUB at 0.0070 is less than the critical value of 0.05, thus, therefore the alternative hypothesis, which states that there is a significant relationship between SUB and ROA of selected Deposit Money banks in Nigeria, is accepted.

4.6 Test of Hypothesis II
Ho: There is no significant relationship between doubtful assets and return on equity of selected Deposit Money Banks in Nigeria.

H_1: There is a significant relationship between doubtful assets and return on equity of selected Deposit Money Banks in Nigeria.

4.7 Decision Rule
Accept the alternative hypothesis, if the P-value of the test is less than 0.05. Otherwise accept the null hypothesis.

Table 5: Testing the relationship between Doubtful Assets (DOU) and Return on Equity (ROE)

Dependent Variable: ROE				
Method: Least Squares				
Date: 03/08/23 Time: 11:57				
Sample (adjusted): 2008 2021				
Included observations: 14 after adjustments				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	-0.019970	0.164948	-0.121071	0.9044
DOU	-0.000821	0.012004	4.068380	0.0059
R-squared	0.500142	Mean dependent var		-0.016000
Adjusted R-squared	0.430157	S.D. dependent var		0.899916
S.E. of regression	0.913384	Akaike info criterion		-9.712125
Sum squared resid	27.53094	Schwarz criterion		-9.801002
Log likelihood	45.46219	Hannan-Quinn criter.		-9.742805
F-statistic	10.04676	Durbin-Watson stat		1.181260
Prob(F-statistic)	0.005896			

***Source*:** Researcher's computation using E- View 11.0

4.8 Interpretation of Regression Result
The regressed coefficient correlation result in table 5 shows the existence of a statistically significant relationship between DOU ($\beta_{1=}$ -0.000821) and ROE at 5% significant level although the significance is negative. The probability value for the slope coefficient shows that P(x_1=0.0059<0.05). This implies that DOU has a statistically significant relationship with ROE at 5%

significance level. The coefficient of determination obtained is 0.50 (50%), which is commonly referred to as the value of R^2.

The cumulative test of hypothesis using R^2 to draw statistical inference about the explanatory variables employed in this regression equation, shows that the R-Squared value tells that 50% of the systematic variations in the dependent variable can be jointly predicted by the independent variable (DOU) while the remaining 50% was explained by unknown variables that were not included in the model. The Durbin-Watson statistic of 1.181260 indicates that there is no auto-correlation problem. The overall significance of the model Prob. F-statistic (0.005896) is statistically significant at 5%.

Consequently, since the P-value of DOU at 0.0059 is less than the critical value of 0.05, thus, therefore, the null hypothesis, which states that there is a significant relationship between DOU and ROE of selected Deposit Money Banks in Nigeria is accepted.

4.9 Test of Hypothesis III

Ho: There is no significant relationship between loss assets and net interest margin of selected Deposit Money Banks in Nigeria.

H_1: There is a significant relationship between loss assets and net interest margin of selected Deposit Money Banks in Nigeria.

4.10 Decision Rule

Accept the alternative hypothesis, if the P-value of the test is less than 0.05. Otherwise accept the null hypothesis.

Table 6: Testing the relationship between LOSS and Net interest Margin (NIM)

Dependent Variable: NIM				
Method: Least Squares				
Date: 03/8/23 Time: 12:02				
Sample (adjusted): 2008 2021				
Included observations: 14 after adjustments				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	-0.382622	0.760199	-0.503319	0.6181
LOSS	-0.009349	0.050336	-4.185725	0.0053
R-squared	0.481044	Mean dependent var		-0.381714
Adjusted R-squared	0.329227	S.D. dependent var		4.432989
S.E. of regression	4.497304	Akaike info criterion		5.900279
Sum squared resid	667.4496	Schwarz criterion		5.989156
Log likelihood	21.02549	Hannan-Quinn criter.		5.930959
F-statistic	10.04494	Durbin-Watson stat		0.759823
Prob(F-statistic)	0.005309			

***Source*:** Researcher's computation using E- View, 11.0

4.11 Results and Discussions

Having tested the hypotheses, the first finding reveals that there is a significant negative relationship between substandard assets and return on assets of selected Deposit Money Banks in Nigeria. This means that the higher the quantum of sub-standard assets, the smaller the return on assets. This finding is in line with Study by Felix and Claudine (2008) [64] which assessed the association between banks' performance and credit risk management practices. Their findings showed that ROA and ROE, both measuring profitability of financial institutions, were negatively related to the ratio of NPLs to total loan of financial institutions hence leading to a decline in profitability. Note that high sub-standard assets will definitely attract lower return on assets of any commercial bank.

The second finding reveals that doubtful assets has a negative significant relationship with return on equity of selected Deposit Money Banks in Nigeria. Moreover, Abreu and Mendez (2002) posit that companies' equity rises as a result profitability and sound management. Therefore, if there is increase in doubtful debts, it will negatively affect profitability and business expansion. The reverse is the case if doubtful assets decrease.

The third finding shows a negative and significant relationship between loss assets and bank's net interest margin. This means that the greater the losses witnessed by a bank, the lesser the profit declared and vice versa. This finding is in line with Jibueze (2014) which reveals a negative effect of asset losses on profitability of banks. The study maintained that inability of banks to undergo a proper background check before extending credits to customers is the leading causes of bad debts.

This study improves on some of the existing studies, especially those of Ugoani (2013) [52], Onoh (2013) [65], Ibrahim (2011) [25] and Abioye (2015) [2]. They paid a lot of attention on bank profitability and credit administration but this study used sub-standard assets, doubtful assets and loss assets as a proxy for non-performing assets so as to comprehensively determine their relationships on bank profitability. It also updated this study to 2021.

5. Conclusion

This study examined the relationship between non-performing assets and bank profitability in Nigeria. From the forgoing discussion and analyses, the study concludes that corporate governance is key to efficient bank management. It will help to minimize to its barest minimum the issue of non-performing loans as witnessed by banks under consideration.

5.1 Recommendations

The following policy recommendations are proffered from the findings and conclusion of this study:

1. There is need for Banks in Nigeria especially Union Bank of Nigeria PLC, Unity Bank PLC and Polaris Bank PLC to comprehensively engage investors and

their customers during loan extension and appraisal. This will go a long way in minimizing the issue of sub-standard assets and increase their return on asset since investors patronizes banks that are profitable.
2. Doubtful assets can lead to bank failure if not properly curtailed. Therefore, it behoves selected banks to actually practicalize the C's of lending, which has to do with character, credit-worthiness, collateral, capacity etc. before administering loan to investors or customers. It has shown in the analysis that the higher the doubtful assets, the smaller the return on equity of banks.
3. The main objective of any firm is to maximize (shareholders) profit. Any bank that witnesses' losses consistently is heading towards distress and failure eventually. To this end, government at all levels in Nigeria should as a matter of policy reduce the cost of doing business in Nigeria through the provision of infrastructural facilities such as constant power supply, good roads efficient communications systems. This will go a long way in minimizing losses incurred by selected banks.

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