

# The Effect of Non Performing Loans on the Performance of Deposit Money Banks in Nigeria in the Wake of a Global Economic Recession

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**Abstract**— This study examines the correlation that exists between non-performing loan and performance of deposit money banks in Nigeria. The result in Vector Autoregressive Estimate(VAR) with one period lag length revealed that one period lag of return on asset (ROA) has negative and significant influence on current ROA; non-performing loans exerts positive and insignificant influence on ROA; while loans and advances had negative and insignificant influence on ROA and INTR is found to be positively and insignificantly related to ROA. These outcomes entail that a unit change in loans and advances causes -6.31 decreases in ROA .It also shows that a unit change in non-performing loans causes 5.76 increases in ROA and a unit change in interest leads to about 0.45 increase in ROA. Based on the findings, we recommend that monetary authorities should quickly put strong risk management policies in place that would reduce non performing loans and thereby boost deposit money banks' performance.

**Index Terms**— Non-performing Loans, Return on Asset, Deposit Money Banks, Vector Autoregressive.

## I. INTRODUCTION

As a provider of credit to various sectors which require funds for growth, the role of the banking industry cannot be over-emphasized. Consistent with Adegbe and Dada (2014); Agbada and Osuji (2013) banks remain one of the essential financial institutions that contribute efficiently to the growth of an economy. They are the principal financial base of the economy by funds provision from the surplus sector to the deficit sector of the same economy for developmental purposes. The financial system represents one of the major components requisite for the survival of the system. This being the case, the banking institutions have contributed meaningfully to the success of the entire financial system as they provide well-organized institutional mechanism through which resources can be mobilized and directed from less important uses to more dynamic investment. In the overall banking industry, banks perform the function of financial intermediation which encompasses the mobilization of funds from savings surplus units of the economy to the borrowers' deficit units by means of loans and advances.

In early 2020 the Corona virus (COVID 19) became a global pandemic and caused a convulsive shock to the global economy. There remains considerable uncertainty around the

pathway of the pandemic, the means and speed of any economic recovery and what structural changes – particularly to the globalisation of trade and capital – it will bring in the longer-term. The pandemic is already radically worsening the economic outlook for Africa, with growth expected to collapse to a negative 1.6% and a real per capita fall of 3.9%, making 2020 the worst year since records began in 1970 for the continent's economic growth.

As a result of the COVID-19 pandemic, the economy has come to a sudden halt. This is likely to bring about high levels of non-performing loans (NPLs). High NPLs are problematic because they impair bank balance sheets, depress credit growth, and delay economic recovery (Aiyar et al. 2015, Kalemli-Ozcan et al. 2015). Persistently high NPL ratios were a concern in several European countries after the 2008-2012 crisis, and the COVID-19 pandemic could cause a re-emergence of the NPL problem. The pandemic, according to the World Bank, has become a threat to stability in the banking sector and could push another five million Nigerians into the poverty bracket (Chima, 2020). Is it possible to cushion the effects and shorten the recovery period? What steps should be taken? These gave rise to the study into the assessment of the effect of non-performing loan on the performance of DMBs in Nigeria in the wake of a global economic recession. Annual data for the estimation is drawn from the central Bank of Nigeria Statistical Bulletin and Nigeria Deposit Insurance Corporation (NDIC) publications for various years spanning 2008/9 to 2018 were employed. The rest of the paper is structured as follows: section two reviewed relevant theoretical and empirical literature; section three handled the methodology; section four dealt data description and analysis; while, section five summarised the study and provided recommendations

## II. LITERATURE REVIEW

In general Non-performing loans, NPLs indicates bad business for banks and constitute risk to financial stability. Factors responsible for NPLs include: macroeconomic, global, bank-specific, and institutional factors. We shall take a brief look at these factors. The recurring nature of bank credit undoubtedly links business cycles to evolution of NPLs as well as loan loss provisioning. NPL ratio tends to be low and loan loss provisioning subdued in a period of economic boom. Competitive pressure and confidence due to the macroeconomic outlook frequently lead to a relaxation of lending standards, setting the stage for defaults. The severity of bad loans, nevertheless, rests on the institutional

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arrangements and the prevailing regulatory frameworks. Certainly, disparities in financial regulation and supervision affect banks' behaviour and risk management practices, which are essential in explaining cross-country differences in the dynamics of NPLs (Nkusu, 2011; Kure et al, 2017).

### **A. Conceptual review**

#### *Macroeconomic and global factors*

Consistent with Fofack (2005); Espinoza and Prasad (2010); Nkusu (2011); Klein (2013) and; Kure et al, (2017), there are various macroeconomic determinants of non-performing loans. Usually they revolve around factors, such as the growth of domestic production, GDP, inflation, exchange rate, unemployment, and fluctuations in interest rates. The macro environment typically affects balance sheets of business agents, which, in turn, affect capacity to honour debt obligations. This being the case, macroeconomic variables such as inflation rate, interest rate, foreign exchange rate and GDP tend to have some form of influence to NPLs. These variables could have a positive or negative impact on NPLs based on their values. Borrowers' repayment capacity reduces with higher rates of inflation, interest and foreign exchange, which leads to increased NPLs, the reverse is the case with lower rates of inflation, interest and foreign exchange.

#### *Bank-specific and institutional factors*

These important bank-specific determinants are risk-taking tendencies that are likely to be affected by moral hazard, agency problems, ownership structure, and regulatory actions. Other determinants are equity-to-asset ratios, bank profitability, loans-to-asset ratios, bank size, capital ratios, market power, operation efficiency and exposure to local markets (Espinoza and Prasad, 2010).

#### *Effects of non-performing loan on DMBs*

Non-performing loans have adverse effect on bank's liquidity and profitability which are the key components of the general efficiency of banks as any increase in NPLs provision diminishes income and furthermore, a mismatch of maturities between asset and liability lead to liquidity risk or deteriorates bank's overall credit rating. (Badar&Yasmin, 2018; Ogundipe, Akintola and Olaoye, 2020).

### **B. Theoretical Review**

In assessing the effect of non-performing loans on the performance of deposit money banks, DMBs in Nigeria in the wake of a global economic recession, we shall anchor on the following theories:

#### *2.2.1 Commercial Loan Theory*

According to Sanghani (2014); Taiwo, Achugamonu, Adetiloye, Okoye, Agwu (2017); Ogundipe, Akintola and Olaoye (2020) the commercial loan theory, also referred to as the real bills doctrine theory was developed by Adam Smith in England during the 18<sup>th</sup> century. The theory states that a commercial bank should provide only short-term self-liquidating productive loans to business organizations. Loans intended to finance the production, and evolution of goods through the successive phases of production, storage,

transportation, and distribution are regarded as self-liquidating loans. An assumption of the theory is that every time commercial banks make short term self-liquidating productive loans, the central bank should lend to the banks on the security of such short-term loans. This guarantees that there exists an appropriate degree of liquidity for each bank and appropriate money supply for the entire economy. This theory is beset by certain drawbacks which include: It considers that loans are self-liquidating in typical economic situations which are not always so. In periods of economic crisis, production and trade usually deteriorates, thereby making it difficult for the debtor to repay the debt at maturity. Furthermore, there is in reality no self-liquidating loan. A loan disbursed to a retailer is not self-liquidating if the items acquired are not sold to consumers.

#### *2.2.2 Loan Pricing Theory*

Loan pricing theory propounds that banks cannot always set high interest rates as the problem of adverse selection and moral hazard should be considered since it is very challenging to forecast the type of borrower at the commencement of a banking relationship (Stiglitz and Wiess, 1981; Ogundipe, Akintola and Olaoye, 2020). Should banks set very high interest rates, the problem of adverse selection may be induced due to the fact that high-risk borrowers are willing to accept these high rates. This is known as borrower's moral hazard since they (borrowers) are likely to take on high risk projects or investments (Chodecai, 2004; Ogundipe, Akintola and Olaoye, 2020). Stiglitz and Wiesz (1981) are of the opinion that in some instances it is usual to find that interest rates set by banks may not be commensurate with the risk of non-repayment of loans by the borrowers.

### **C. Empirical Review**

Ofonyelu and Alimi (2013) in their study on perceived loan risk and *ex post* default outcome with emphasis on efficiency of banks' loan screening criteria, provides evidence that bank screening criteria do not effectively exclude total default risk, and confirm that perceived and ex-post default risks differ. Utilizing data obtained from a survey of investment loans made to 210 borrowers between 2000 and 2012 among 15 commercial banks in Nigeria, the study observed that the banks' screening criteria was limited by the presence of information asymmetry. Adverse selection and moral hazard were observed to persist in the loan markets regardless of the strictness of the banks' screening measures. The observed difference between estimated and ex-post default risk incidence arose due to information asymmetry.

Sangmi and Nazir (2010) analyzed financial performance of commercial banks in India: Application of CAMEL Model, indicated that bank assets include among others; current assets, loan portfolio, tangible assets, and other investments which typically, are the major assets that generate the biggest share of the bank's income. Therefore, the highest risk facing a bank is the losses that will arise from non-performing loans. Consequently, the ratio of non-performing loans to total loans granted is the best proxies for determining a bank's asset

quality. When the ratio is low it indicates that the bank's portfolio is in top gear but when it is high, the reverse is the case. They concluded that the lower the ratio, the better the DMBs financial performance. Khemraj and Pasha (2009) explored the determinants of non-performing loans in the Guyanese banking sector using a panel dataset and a fixed effect model. Study results show that the real effective exchange rate has a significant positive impact on non-performing loans. This specifies that whenever there is an appreciation in the local currency the non-performing loan portfolios of DMBs are likely to be higher. Further, GDP growth is inversely related to non-performing loans, suggesting that an improvement in the real economy translates into lower non-performing loans. Additionally, banks which charge relatively higher interest rates and lend excessively are likely to incur higher levels of non-performing loans.

#### *Deposit money banks and the COVID 19 pandemic situation*

Recall that the 2016 recession caused by falling oil exports and the subsequent years of economic weakness weighed significantly on loan issuance, with credit extension falling by an average of 2.4 per cent between July 2017 and June 2019. Nigeria's ratio of nonperforming loans (NPLs) to total loans rose from 5.3 per cent in fourth quarter 2015 before the recession to as high as 15.1 per cent in third quarter 2017.

In order to beef up bank loans to the private sector, in July 2019, the Central Bank of Nigeria (CBN) introduced a minimum loan-to-deposit ratio (LDR) of 60 per cent for commercial banks in order to bolster loan issuance, with penalties for failing to reach this. A number of banks missed the target, leading to levies exceeding a total of N400 billion in September and the CBN raising the minimum LDR to 65 per cent. Nonetheless, growth of commercial bank loans to the private sector has since accelerated to 13.8 per cent year-on-year in February 2020.

#### *CBN monetary policy to ease off bad debts*

Analysts at Afrinvest West Africa Limited stated that, "the worry is that history could repeat itself, with shocking impact to the economy like we saw during the 2016 recession." "In Nigeria, early effects of the COVID 19 crisis and control measures have reflected in modest decline in output growth, exchange rate depreciation, rising public debts and domestic prices amidst existing structural challenges. The Deputy Governor, Financial System Stability Department, Central Bank of Nigeria (CBN), Mrs. Aisha Ahmad, has said that 17 commercial banks have submitted requests, June 2020, to restructure over 32,000 loans for individuals and businesses impacted by COVID-19 pandemic (Chima, 2020).

Interestingly, in the wake of the COVID-19 pandemic, the CBN maintained the current monetary policy rate in March, but introduced additional measures, including: reducing interest rates on all applicable CBN interventions from 9 to 5

percent and introducing a one-year moratorium on CBN intervention facilities.

Besides, the apex bank created a NGN50 billion (USD139 million) targeted credit facility, and liquidity injection of NGN3.6 trillion (stimulus package in the form of loans) (2.4% of GDP) into the banking system along with another tranche of NGN100 billion to support the health sector, NGN2 trillion to the manufacturing sector, and NGN1.5 trillion to impacted industries in the real sector. The government also reviewed its 2020 budget and, given the expected large fall in oil revenues, announced plans to cut/delay non-essential capital spending by NGN1.5 trillion (close to 1% of GDP).

### III. DATA AND METHODOLOGY

The data for the estimation was obtained from the central Bank of Nigeria Statistical Bulletin and Nigeria Deposit Insurance Corporation (NDIC) publications for various years, which covers the period, 2008-2019. The research design is *ex post facto* design, as it focuses on already completed events. We tested the model variables for stationarity using the Augmented Dickey-Fuller (ADF) unit root test. Based on the outcome in which we had mixed orders of integration, we employed the vector autoregressive (VAR) estimation technique in analyzing our model. The VAR structure is that the dependent variable is a linear function of lag of itself and lags of the explanatory variables. Thus, the baseline functional form of the model variables is represented as follows:

$$ROA = F(\text{LogNPL}, \text{LogLA}, \text{INT}) \quad (1)$$

Equation (1) reads that return on asset (which is our proxy for bank performance) is a function of natural logarithms non-performing loan (LogNPL), loans and advances (LogLA), and interest rate (INT). To capture the influence of the error term and introduce the lag functions of the series to the model, Equ. (1) can be expressed as follows:

$$ROA_t = \beta_0 + \beta_1 ROA_{t-1} + \beta_2 \text{LogNPL}_{t-1} + \beta_3 \text{LogLA}_{t-1} + \beta_4 \text{INT}_{t-1} + \varepsilon_t \quad (2)$$

Where  $t_{-1}$  denotes lags,

ROA = Return on Assets

ROA<sub>t-1</sub> = A period lag of Return on Assets

LogNPL<sub>t-1</sub> = A period lag of natural log non-performing loan

LogLA<sub>t-1</sub> = A period lag of natural log loans and advances

INT = A period lag of interest rate

$\beta_0$  = intercept

$\beta_1 - \beta_4$  = Coefficients

$\varepsilon$  = Error term

IV. RESULTS AND DISCUSSION

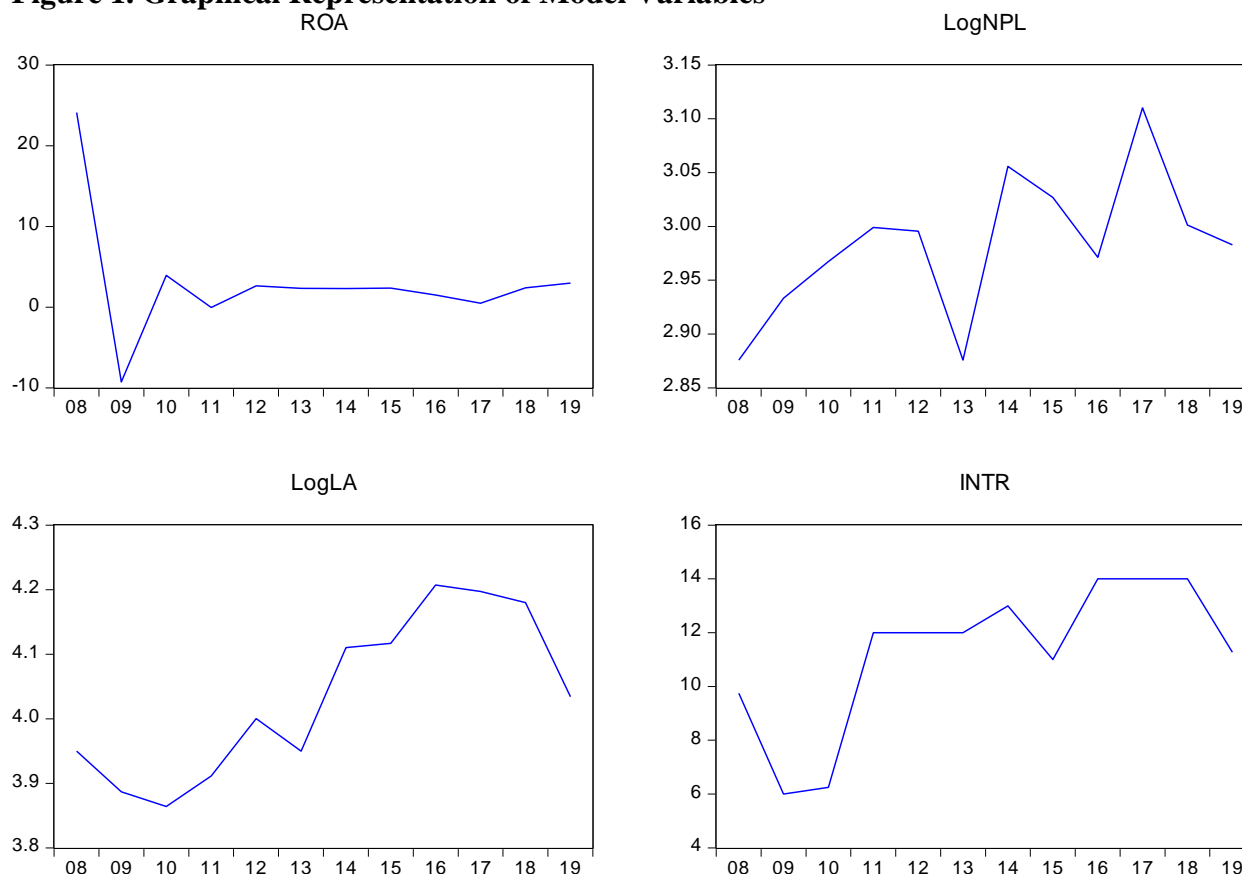
A. Descriptive Statistics

Table 1. Descriptive Statistics

	ROA	LOGNPL	LOGLA	INTR
Mean	2.967273	2.982904	4.033965	11.27273
Median	2.335000	2.989225	4.017104	12.00000
Maximum	24.11000	3.110098	4.207290	14.00000
Minimum	-9.280000	2.875798	3.864080	6.000000
Std. Dev.	7.489643	0.067407	0.124846	2.735405
Skewness	1.710407	-0.013638	0.122195	-0.972780
Kurtosis	7.010983	2.705990	1.540713	2.817309
Jarque-Bera	13.89497	0.043593	1.094623	1.909291
Probability	0.000961	0.978439	0.578503	0.384949
Sum	35.60727	35.79485	48.40758	135.2727
Sum Sq. Dev.	617.0422	0.049981	0.171451	82.30682
Observations	12	12	12	12

Table 1 explains the statistical descriptions of the variables in our model. The results revealed that ROA averaged 2.97 while the logarithm of NPL and LA averaged 2.98 and 4.03, respectively. The mean of INTR was 11.27%. The results also showed that LogNPL, LogLA and INTR are normally distributed, which is indicated by the p-value of the Jarque-Bera (J-B) statistics, all of which are more than 5% level of significance. However, ROA did not provide evidence of normal distribution, with the p-value of J-B statistics being less than 5% level of significance.

Figure 1. Graphical Representation of Model Variables



B. Stationarity Test

**Table 2. Result of Unit Root Test**

Variab le	ADF-Statistic	5% critical value	P-value	Order of Integration	Inference
ROA	-48.52279	-3.212696	0.0001	I(1)	Stationary
LogNPL	-3.432751	-3.175352	0.0334	I(0)	Stationary
LogLA	-2.834453	-1.982344	0.0097	I(1)	Stationary
INTR	-3.581384	-3.212696	0.0288	I(1)	Stationary

The Augmented Dickey Fuller Unit Root Test, following the form developed by Dickey and Fuller (1979) were employed to test for the presence or non-presence of the unit root, to ensure non-spurious results in Table 2. The results show that our variables are stationary at different orders of integration. While ROA, LogLA and INTR are stationary at order one, [i.e. I(1)], LogNPL is stationary at level, [i.e. I(0)]. Given that we have a mix of I(0) and I(1) in our stationarity test result, it becomes appropriate to employ the VAR technique in estimating our model as presented in Table 3.

C. Regression Result

**Table 3. Result of Vector Autoregressive (VAR) Estimate**

Dependent Variable: ROA

Method: Least Squares (Gauss-Newton / Marquardt steps)

Date: 08/07/20 Time: 00:03

Sample (adjusted): 2009 2019

Included observations: 11 after adjustments

ROA = C(1)\*ROA(-1) + C(2)\*LOGNPL(-1) + C(3)\*LOGLA(-1) + C(4)\*INTR(-1) + C(5)

	Coefficient	Std. Error	t-Statistic	Prob.
ROA(-1)	-0.424591	0.047392	-8.959205	0.0001
LOGNPL(-1)	5.755773	6.547895	0.879026	0.4132
LOGLA(-1)	-6.313640	4.770504	-1.323475	0.2339
INTR(-1)	0.449993	0.196293	2.292455	0.0617
Intercept	5.532523	19.27648	0.287009	0.7838
R-squared	0.948427	Mean dependent var		1.045207
Adjusted R-squared	0.914046	S.D. dependent var		3.597076
S.E. of regression	1.054589	Akaike info criterion		3.247134
Sum squared resid	6.672945	Schwarz criterion		3.427995
Log likelihood	-12.85924	Hannan-Quinn criter.		3.133126
F-statistic	27.58527	Durbin-Watson stat		1.997297
Prob(F-statistic)	0.000527			

Regression estimates in Table 3 is based on VAR estimate with one period lag length. The estimation results reveal that one period lag of ROA has negative and significant influence on current ROA. Moreover, the results show that while LogNPL exert positive and insignificant impact on ROA, LogLA had negative and insignificant influence on ROA. INTR is found to be positively but not significantly related to the dependent variable. These outcomes entail that when LogNPL changed by one-unit, ROA increased by 5.76 unit. On the other hand, when LogLA changed by one-unit, ROA declined by 6.31 units. The result also indicates that 1% change in INTR lead to about 0.45 units increase in ROA. It is established that the model has goodness of fit as the R-squared suggests. This shows that 98% of the variation in

the dependent variable is accounted for by the independent variables, with an unexplained variation of about 12%. The results further indicated that the regressors jointly have significant effect on public investment as shown by the p-value of the F-statistic (0.00000 < 0.05). The Durbin Watson statistic is also approximately 2.0, thereby indicating that our model do not have autocorrelation problems.

V. CONCLUSION

This study assessed the effect of non-performing loan on the performance of deposit money banks in Nigeria. The result in Vector Autoregressive Estimate (VAR) with one period lag length revealed that one period lag of ROA has negative and significant influence on current ROA; LogNPL



exerts positive and insignificant influence on ROA; while LogLA had negative and insignificant influence on ROA and INTR is found to be positively and insignificantly related to ROA. These outcomes entail that a unit change in LogLA causes -6.31 decrease in ROA. It also shows that a unit change in LogNPL causes 5.76 increase in ROA and a unit change in INTR leads to about 0.45 increase in ROA.

By way of policy recommendation or positioning, it is recommended that the CBN and other monetary authorities consider the following mix of measures to help reduce non-performing loan as it affects bank performance in the event of a pandemic crisis:

- Asset quality reviews, to identify loans that are nonperforming and need restructuring; as already requested by 17 commercial banks in Nigeria (Chima, 2020)
- Separating good and bad assets of banks. This makes the financial conditions of good banks more transparent, steadies their market access, and lets them focus on extending new lending. Bad banks, often structured as asset management companies, proceed to extracting value from bad assets
- Recapitalising ‘good banks’, to enhance their lending capacity (Ari, et al, 2020),

#### REFERENCES

- [1] Adegbe, F.F. & Dada, O.T. (2014). Risk assets management, liquidity management and sustainable performance in Nigeria deposit money banks. *International Journal of Accounting Research*, 6(2), 1-10.
- [2] Adeusi, S.O. & Dada, O. (2017). Impact of credit risk management on deposit money banks performance in Nigeria. *Journal of Association of Professional Bankers in Education (JAPBE)*, 1(1), 163-178.
- [3] Agbada, A.O. & Osuji C.C. (2013). The efficacy of liquidity management and banking performance in Nigeria. *International Review of Management and Business Research*, 2, 223-233.
- [4] Aiyar, S., Bergthaler, W., Garrido, J.M., Ilyina, A., Jobst, A., Kang, K., Kovtun, D., Liu, Y., Monaghan, D. & Moretti, M. (2015). A strategy for resolving Europe’s problem loans. *IMF Staff Discussion Note 15/19*.
- [5] Ari, A., Chen, S. & Ratnovsk, L. (2020). [The dynamics of non-performing loans during banking crises: a new database](#). *European Central Bank Working Paper 2395*.
- [6] Badar, M., & Yasmin, J. A. (2013). Impact of macroeconomic forces on nonperforming loans: An empirical study of commercial banks in Pakistan. *WSEAS Transactions on Business and Economics*, 10(1), 40-48.
- [7] Balogun, E.D. & Alimi, A. (1990). Loan delinquency among small farmers in developing countries: A case study of the small-farmer credit programme in Lagos State of Nigeria, *CBN Economic and Financial Review*, 26(3).
- [8] Chima, O. (2020, June 26). CBN: 17 Banks request to restructure 32,000 customers’ loans. *This Day*.
- [9] Chima, O. (2020, July 1). Fitch: Nigerian banks’ lending to slump to 2.5% in 2020. *This Day*.
- [10] Chodechai, S. (2004), Determinants of bank lending in Thailand. An empirical examination for the years 1992 – 1996, *Unpublished Thesis*.
- [11] Espinoza, R., & Prasad, A. (2010). Nonperforming loans in the GCC banking system and their macroeconomic effects. *IMF Working Papers*, 25.
- [12] Fofack, H. (2005). Nonperforming loans in Sub-Saharan Africa: Causal analysis and macroeconomic implications. *World Bank Policy Research Working Paper*, 3769.
- [13] Khemraj, T. & Pasha, S. (2009). The determinants of non-performing loans: an econometric case study of Guyana. *MPRA Paper No. 53128*, Accessed on 10/8/2020, from: <https://mpra.ub.uni-muenchen.de/53128/>
- [14] Nkusu, M. (2011). Nonperforming loans and macrofinancial vulnerabilities in advanced economies. *IMF Working Papers*, 29.
- [15] Klein, N. (2013). Non-performing loans in CESEE: Determinants and impact on macroeconomic Performance. *IMF Working Papers*, 13(72), 1.
- [16] Kure, E., Adigun, M. & D. Okedigba, D. (2017). Non-performing loans in Nigerian banks: Determinants and macroeconomic consequences. *Central Bank of Nigeria Economic and Financial Review*, 55(3), September 2017, 1-24.
- [17] Ofonyelu, C.C., & Alimi, R.S. (2013). Perceived loan risk and ex post default outcome: Are the banks’ loan screening criteria efficient? *Asian Economic and Financial Review*, 3(8), 991-1002.
- [18] Ogunipe, A.S., Akintola, A.F. & Olaoye, S.A. (2020). Interest rates and loan performance of deposit money banks in Nigeria. *EPRA International Journal of Economic and Business Review*, 8(1), 13-25.
- [19] Sangmi, M. & Nazir, T. (2010). Analyzing financial performance of commercial banks in India: Application of CAMEL model, *Pakistan Journal of Commerce and Social Sciences (PJCSS)*, ISSN 2309-8619, Johar Education Society, Pakistan (JESPK), Lahore, 4(1), Iss. 1, 40-55.
- [20] Stiglitz, J. E., & Weiss, A. (1981). Credit rationing in markets with imperfect information. *American Economic Review*, 71, 393-410.
- [21] Taiwo, J. N., Ucheaga, E. G., Achugamonu, B. U., Adetiloye, K., Okoye, L. & Agwu, M. E. (2017). Credit Risk Management: Implications on Bank Performance and Lending Growth. *Saudi Journal of Business and Management Studies*, 2(5), 584-590.