

Credit Risk Management and Networking Capital of Deposit Money Banks

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Abstract: *Credit administration is the most risky and difficult and at same times most profitable function performance by banks. The main key strategic value a bank adds has always depended upon its ability to manage credit risk. The administration cannot be done without an effective risk management control and follow up strategy. The main objective of the study is to investigate the effects of credit risk management on networking capital of deposit money banks. the data was sourced from central bank of Nigeria statistical bulletin. The variables were network capital as the dependent variables, while inflation rate, capital adequacy, non-performing loan, size of loan and foreign exchange rate as the independent variables. Econometric techniques employed in this study including descriptive statistics, Hausman Test and the Ordinary Least Square Regressions were used. The result of the study indicates that The study found out that Capital adequacy and size of loan as credit risk management variables have positive but significant effect on networking capital of deposit money banks in Nigeria, while inflation rate, non-performing loan and foreign exchange rate has an insignificant negative effect. Capital adequacy and non-performing loan as credit risk management variables have positive and significant effect on debt ratio on deposit money banks in Nigeria, while inflation rate, size of loan and foreign exchange rate has an insignificant effect. Amongst the recommendations Capital adequacy of banks should be closely monitored in such a way that it will not be less than the minimum Central Bank of Nigeria provision. With this, the financial health and strength of banks will not be jeopardized.*

Keywords: *Inflation rate, capital adequacy, non-performing loan, size of loan and foreign exchange rate.*

Introduction

Credit administration is the most risky and difficult and at same times most profitable function performance by banks. The main key strategic value a bank adds has always depended upon its ability to manage credit risk. The administration cannot be done without an effective risk management control and follow up strategy (Iyinomen, Okoye, & . Orjinta, 2020). Credit risk decreases when practices require that bank management put in place standards for appraising and approving individual credit application to ensure that loan granted are paid as at when due and also used for its sole purpose. Risk increases due to poor credit administration caused by loopholes and violation in risk assessment and control techniques, bad and doubted debts still claiming bulk charge on bank performance causing many bank to witness institutionalized distress and some total unexpected collapse. Lending carries a reasonable portion of resources exposure of

deposit banks in Nigeria; there is still ability of banks to generate much portfolio (Kankpang, Lawal, & Uklala, 2023). The role of credit risk management in the intermediation process is a stimulus for economic development. Banking is a very risky occupation. Banking crises have developed many times throughout history when one or more risks materialize. Because of its significant implications, the loss of banks has become a problem for the Central Bank of Nigeria and the owners of those banks (Hieu, 2021). Banks are exposed to high risk as a result of unsecure lending. Greening and Bratanovic (2019) considered that credit risk (non-performing loans) is an incentive for the debtor of a financial instrument (individual, business or country) not to repay cash flows connected to capital and investment under the conditions stated in the credit agreement. Banks are an integral part of a country's development. Their major role in any economy is the ability to mobilize funds from surplus units to the deficit units through lending activities (Kajola, Adedeji, Olabisi & Babatolu, 2018).

This intermediation function of banks gives rise to different types of risks such as credit risk, liquidity risk, market risk, legal risk, interest rate risk, exchange rate risk and operational risk. Basel (2001) identified interest rate risks and exchange rate risk as the major form of risks that affect financial institutions. Among these risks, credit risk is one of the most common causes of bank failures and the success of their business depends on accurate measurement and efficient management of credit risk more than any other risks such as: Liquidity risk, market risk, legal risk, interest rate risk, exchange rate risk and operational risk. (Kolapo, Ayeni & Oke, 2012).

Credit risk is the risk of loss due to non-payment of debts owed by an entity. Credit risk may be compounded by liquidity risk. Credit risk refers to the risk that a borrower will default on any type of debt by failing to make required payments. Credit risk can be traceable to two major sources- bank management (through lack of thorough investigation of loan requests of the customer) and the customer (through hidden agenda, unknown to the bank,). These combined activities of banks' management and customers lead to non-repayment of both the principal sum and interest as and when due (Pandey, 2015). The loans that are not paid at the agreed date are known as non-performing loans. An effective credit risk management centers on the practice of a good corporate governance (Surya, 2016). Corporate governance according to (Greuning & Bratanovic, 2019) broadly includes the laws, regulations and acceptable business practices of both private and public institutions that govern the relationship between business managers or entrepreneurs (corporate insiders) and the investors or shareholders. Good corporate governance is expected to enhance the effectiveness of risk management, hence financial stability (Sanusi, 2012),

Bank management recognizes the fact that mitigating the occurrence of the risk of non-performing loans can only come from the institution of pragmatic credit administration policy and the policy must incorporate risk assessment and follow up mechanism (Siyanbola & Adebayo, 2021). Capital adequacy as an ingredient of credit risk measure depicts the extent to which shareholders' funds cover non-performing loans. It helps to prevent bank failure if it is properly controlled and managed. Capital adequacy is also defined as the amount of capital a bank or other financial institution has to hold as required by its financial regulator. This is usually expressed as a capital adequacy ratio of equity that must be held as a percentage of risk-weighted assets. (Amahalu, Abiahu, Okika & Obi, 2016).

Credit risk is the risk of loss due to non-payment of debts owed by an entity and is a serious threat to bank performance. The importance for strong credit risk management for building quality loan portfolio is of paramount importance to the performance of deposit money banks, as well as the overall economy (Charles & Kenneth, 2013). The vast literatures in accounting, finance and economics, underscores the failure in credit risk management, as one of the main sources of banking sector crises which possibly led to economic failure experienced in the past, including financial crises in Nigeria (Fofack, 2005). Due to increasing rate of non-performing loans and its attendant consequences, the Central Bank of Nigeria through Basel I and Accords II emphasized the importance of capital adequacy for mitigating credit risk. Capital adequacy in banking business provides protection against sudden financial losses and serves as a distress prevention strategy. The level of capital as a cushion to absorb credit and other losses, is matched with the portfolio of risk depending on the risk characteristics of individual transactions, their concentration and correlation. Therefore, effect of credit risk management on corporate liquidity of banks is everything directly related to the processes of approving customers for onboarding, extending payment terms, setting credit and payments policy, issuing credit or financing and monitoring business cash flow. It is practiced by banks and businesses across all industries and markets

In order to find a lasting solution to the recurring non-performing loans that has bedeviled Nigerian banks, the Federal Government of Nigeria established the Asset Management Corporation of Nigeria (AMCON) in July, 2010. There are other efforts made by the Central Bank of Nigeria (CBN) to ensure sound and efficient financial institutions' performance. This includes the establishment of Nigeria Deposit Insurance Corporation (NDIC) in 1988 to protect depositors' funds, issuance of Prudential Guidelines (1991& 2010), and recapitalization policy of July 2004, Problem loans are specific to a borrower's loan(s) or its risk rating with the financial institution. A problem loan is not the same as a "problem borrower," which may include poor communication with their relationship team or reputational risk for the lender, among other things. A problem loan is one that poses a "challenge" for a lender. It may occur when the borrower ceases to make interest or principal payments (delinquency) or where repayment of the loan, as per the terms of the credit agreement, becomes otherwise less likely. The effect of credit risk management on profitability of deposit money bank is ambiguous. For example, researchers like Hamza (2017), Ajayi and Ajayi (2017), Adebawo and Enyi (2014), Ejoh, Okpa and Egbe (2014), Epure and Lafuente (2013), amongst others, found evidence that credit risk management does not impact positively on banks profitability while, Ogbulu and Eze (2016), Abiola and Olausi (2014) found that credit risk management indicators significantly impacted on the profitability of deposit money banks. Most authors employed in their study different methodology, while some use short observations periods (some authors used a study period of five years, while others used a ten years period), most of the reviewed authors used outdated literature (i.e their work was lacking in terms of the currency of reviewed literatures), also, there are differences in methodology, some authors did not includes the core variables. A common concern among operators and regulators of banks is the occurrence of non-performing loans with its consequent increase in loan loss provisions, its negative impact on profits and the erosion of banks' capital base. The risk that loans may fail to perform falls under the category of credit risk. Iwedi and Onuegbu (2014) observed that with the creation of Risks Management Department in many deposits

money banks (DMBs), whose responsibility is to manage the banks risk including credit risk yet bad loans (non-performing loans) were as high as 3.16% in Nigeria deposits banks. A greater level of non-performing loan rate in banks records, poor loan processing, inadequate or absence of loan collateral among other things, are linked with poor and ineffective credit risks management that negatively affects banks' performance (Danjuma, Kola, Magaji & Kumshe, 2016).

As a result of these divergent empirical findings, bank management and policy makers find it difficult to formulate an effective risk management policy. The essence of study is to attempt to close this gap, by using an updated literature to analyses effect of credit risk management on corporate liquidity in deposit money bank in Nigeria, secondly, the study will update the data to 2021, thirdly the study will use disaggregated model of five variables to capture the five objectives.

REVIEW OF RELATED LITERATURE

2.1 Conceptual Review

2.1.1 Credit Risk

Credit risk is the probability of a financial loss resulting from borrower's failure to repay a loan. Credit risk is the risk of loss that occurs if debts owed by an entity is not redeemable. Credit risk may be compounded by liquidity risk. Credit risk refers to the risk that a borrower will default on any type of debt by failing to make required payments. Credit risk is also refers to the risk that a lender may not receive the owed principal and interest, which results in an interruption of cash flows and increased cost of collection. The risk is primarily that of the lender and includes lost principal and interest, disruption to cash flows, and increased collection costs. The loss may be complete or partial and can arise in a number of circumstances (Rajan, 1995). Lenders can mitigate credit risk by analyzing factors about a borrower's creditworthiness, such as their current debt load and income.

Credit risk arises when a borrower is expecting to use future cash flows to pay a current debt. Investors are compensated for assuming credit risk by way of interest payments from the borrower or issuer of a debt obligation. Credit risk is closely tied to the potential return of an investment, the most notable being that the yields on bonds correlate strongly to their perceived credit risk (Jappelli & Pagano, 2012). therefore, it is impossible to know exactly who will default on obligations, but proper assessment and management of credit risk can lessen the severity of a loss. Interest payments from the borrower or issuer of a debt obligation are a lender's or investor's reward for assuming credit risk.

The measurement of the credit risk of lending portfolios usually entails the same basic procedure as the measurement of market risk; for example, the Value at Risk (VaR) framework is used in a model that calculates the maximum potential loss or expected loss of the portfolio (Rajedom, 2010). Credit risk models deal with a default event for which one cannot assume simple normality and particular attention must be paid to data constraints that will impinge on many aspects of parameter estimation and setting, including default rate, recovery rate parameters and simulations are time-consuming. When a financial institution has credit exposures, simulations for credit risk management require enormous calculation loads (Agenor. et al., 2014). Basel committee on banking

supervision (2016) hold that risk management processes requires supervisors to be satisfied that the banks and their banking groups have in place a comprehensive risk management process. This would include the Board of senior management to identify, evaluate, monitor and control or mitigate all material risks and to assess their overall capital adequacy in relation to their risk profile. In addition, as suggested by Al-Tamimi (2012) in managing risk, commercial banks can follow comprehensive risk management process which includes eight steps: exposure identification; data gathering and risk quantification; management objectives; product and control guidelines; risk management evaluation; strategy development; implementation; and performance evaluation (Harrington & Niehaus, 2019).

2.1.2 Net working Capital

Net working capital has been defined as the relationship between a firm's current assets and current liabilities. Net working capital represents the difference between the two which enables firm meet daily financial needs. Managers seek to manage working capital effectively in order to reduce risks and ensure optimal investment in short term assets for optimal financial performance. They should ensure that the working capital is controlled and planned (Lazaridis & Tryfonidis, 2016). Maintaining optimal working capital is key to liquidity and profits of a firm (Hampton & Wagner, 2019). Firms should ensure that they have a working capital policy with prioritized funding sources of short term assets while at the same time ensuring optimal current assets investment. Brigham & Gapenski (2017) indicated that profits and risk tradeoff define the working capital of a firm. Aggression in working capital is needed for low risky businesses and vice versa. Risky businesses require conserved working capital with high cash levels (Moyer, McGuigan & Kretlow, 2015).

Sathamoorthi (2012) states that; an increase in current asset to total asset leads to a negative effect on profitability, while an increase in current liabilities to total liabilities gives a positive effect on profitability. A key objective of firms is to ensure balance in the working capital elements. Firms base their performance on management and control of working capital elements by finance managers for working capital optimization (Filbeck & Krueger, 2015). Working capital, also known as net working capital or NWC, was calculated as current assets minus current liabilities. The major components of working capital are accounts receivable, inventories, cash and cash equivalents and accounts payable. Therefore, the changes in net working capital affect the cash holdings. Besides, the changes in short- term debt could be a substitute for cash, because firms may use short-term debt as financial resource. The more efficient the firm is in managing its working capital, the less the requirements for external financing and the better financial performance. The objective of net working capital management (WCM) was to minimize the cost of maintaining liquidity while guarding against the risk of insolvency, working capital policy applies to short-term decisions, and capital structure finance applies to long-term decisions.

2.2 Theoretical Framework

This study will be anchored on the credit risk theory

2.2.1 Credit Risk Theory

Credit risk theory was introduced in 1974 by Robert Merton in his theory of default or default

model which is the basic theory of credit risk. Robert proposed a model for assessing the credit

risk of a company by characterizing the company's equity as a call option on its assets.

There are

two main methods of modeling credit risk which include the structural approach and the intensity-based approach (also known as reduced form approach). Leveraging on Merton model, three important approaches to measuring credit risk was derived by Clifford V. Rossi. These include; the concept of credit spreads, credit portfolio management and loss distribution generated through Monte Carlo simulation. To reduce the lenders risk, the lender may perform a credit check on the prospective borrower, may require the borrower to take appropriate insurance, such as mortgage insurance or seek security or guarantees of third parties. In general, the higher the risk, the higher will be the interest rate that the debtors will be asked to pay on the debt.

Credit risk theory is the first readily available portfolio model for evaluating credit risk. The credit risk approach enables a company to consolidate credit risk across its entire organization, and provides a statement of value-at-risk (VaR) due to credit caused by upgrades, downgrades, and defaults. Credit risk model is useful to all firms that are exposed to credit risk in the course of their business. According to this theory, a firm should develop a methodology to quantify credit risk across a broad range of instruments, including traditional loans, commitments and letters of credit; fixed income instruments; commercial contracts such as trade credits and receivables; and market-driven instruments such as swaps, forwards and other derivatives. Credit risk statistical concepts like probability, means, standard deviation, correlation, and concentrations were developed with three objectives which includes developing a Value at Risk (VAR) framework applicable to all the institutions worldwide that encounter credit risks in the course of their businesses activities. To develop a portfolio view, showing the credit event correlation which can identify the costs of concentrations and the benefits of diversification in a bid to market framework and to apply it in making investment decisions and risk mitigating actions.

2.3 Empirical Review

Nwude and Okeke, (2018) investigated the impact of credit risk management on the performance of deposit money banks in Nigeria using five banks that had highest asset base. Ex-post facto research design was adopted using dataset for the period 2000–2014 collated from the annual reports and financial statement of the selected deposit money banks. Three hypotheses were proposed and tested using ordinary least square regression model. The findings reveal that credit risk management had a positive and significant impact on total loans and advances, the return on asset and return on equity of the deposit money banks. The study recommended that bank managers need to put

more efforts to control the non-performing loan by critically evaluating borrowers' ability to pay back. The regulator should strengthen its monitoring capacity in this regard.

Siyanbola and Adebayo (2021) examined the effect of credit risk management on the financial sustainability of listed deposit money banks in Nigeria. The study adopted an Ex-post facto research design. The population consisted of all 14 listed Deposit Money Banks (DMBs) in Nigeria as at December 31, 2019 out of which a sample of 12 banks were purposively selected based mainly on availability of complete data for ten years period (2010 –2019). Secondary data extracted from the financial statements were analyzed using descriptive and inferential analyses. The population of 14 banks accounted for 53.85% of banks in operation. The study found that credit risk management (CRM) proxied by Loan Deposit Ratio (LDR), Non-performing Loan (NPL) and Assets Growth Percentage (AGP) had a positive significant effect on CAR of listed DMBs in Nigeria (Adj. R2 = 0.0969, F (3,105) = 13.66; P < 0.05). Bank Size (BS) significantly moderated the relationship between the CRM and CAR of listed DMBs in Nigeria (Δ Adj. R2 = 0.0814, Δ F (3,116) = 12.19; P < 0.05). However, CRM had no significant effect on ROCE of listed DMBs in Nigeria (Ad R2 = 0.1873, F (3,105) = 2.73; P > 0.05). BS significantly modified the relationship between the CRM and ROCE positively (Δ Adj. R2 = 0.1779, Δ F (3,116) = 22.88; P < 0.05). Overall, CRM positively and significantly affected the financial sustainability of listed DMBs in Nigeria. The study concluded that credit risk management has a positive significant effect on financial sustainability of listed DMBs in Nigeria. This study recommended that regulators should adopt a risk based approach in determining

capital adequacy requirements and give special attention to banks that are too big to fail while DMBs' managements should ensure that all the board members and executive managements amongst other stakeholders are trained to appreciate the functions and responsibilities of credit risk management

Ajagbe, Ewansiha and Saidu (2022) examined the effect of credit risk management on the financial performance of Eco Bank Nigeria Plc for the period of 2011-2020. Secondary data were sourced from annual reports and financial statement of Eco Bank Nigeria Plc. The study employed ordinary least square regression technique in analyzing the data extracted; the analysis was done with the aid of E-View Econometric tool. The study revealed that loans and advances and loan loss provision have positive and insignificant effect on profitability, while non-performing loan has a negative and insignificant effect on profitability. The R-squared which measures the overall goodness of fit of the regression shows the value of 84.5%. While the Durbin Waston statistic with value of 2.808450 shows that there is relative auto correlation among the considered variables and the overall regression is statistically significant. Thus, the study concluded that sound credit management heightens financial performance and holds the financial strength of the bank. It was recommended that the bank should put in place sound credit management policies and Practice. Issue recoverable loan and advances and provide for loan losses for desired credit risk exposure and increased profitability.

Kwashie, Baidoo and Ayesu (2022) investigated the impact of credit risk with focus on non-performing loans on the financial performance of commercial banks in Ghana. Return on asset and economic value-added are used as measures of financial performance.

Internal bank factors such as the age and size of the bank are also considered. Macroeconomic factors such as gross domestic product, inflation, and monetary policy rate are included in the analysis. Panel data spanning the period 2013 to 2018 on 15 commercial banks in Ghana is used for the analysis. The results from the random effect estimation technique show that non-performing loans have a negative impact on both measures of financial performance. Also, monetary policy rate has a negative impact on both measures of financial performance, albeit insignificant for economic value-added measure. It is further revealed that the size of bank, age of bank, and gross domestic product have a significant positive effect on both measures of financial performance although significant for return on asset. Based on the negative relationship between non-performing loans and financial performance, it is suggested that commercial banks should adopt stringent credit risk management policies, which should also be updated regularly to guide actions and processes to granting of loans and monitoring credit risk. Furthermore, it is suggested that the value of depreciable assets pledged as collaterals to the banks should be reviewed frequently (probably annually) to reflect a decline in their value. The novelty of the present study pertains to the use of economic value-added as a financial performance measure, which previous studies have virtually ignored in the analysis of credit risk and financial performance nexus.

Umar, Tijjani and Salisu (2022) examined the effect of credit risk on financial performance of listed money deposit banks in Nigeria. The study utilized return on equity (ROE) as proxy for financial performance, while credit risk was represented by non-performing loan ratio (NPLR), loan loss provision (LLP), capital adequacy ratio (CAR) and; loans and advances to total deposit (LATD). The study adopts correlation research design and utilized secondary data extracted from the published accounts of the 14 listed money deposit banks in Nigeria from 2011 - 2020. Multiple regression was used for data analysis and results revealed LLP and CAR as having a direct and significant relationship with ROE, while NPLR and LATD have an insignificant effect on ROE. The study therefore recommends among others that quoted money deposit banks should raise the loan loss provision reserves to enable them give additional loans and absorb credit losses if they arise

Jackson and Tamuke (2022) assessed the nexus between credit risks and performance of commercial banks in Sierra Leone using data collected from the Bank of Sierra Leone (BSL) on relevant Financial Soundness Indicators like ROA, Bank Liquidity, NPL, and Credit over the 2008Q1-2018Q4 period. Evidence from (unbalanced) panel data estimation within the fixed effects model shows that the fragility of the banking system stems from high NPLs. We further provide evidence that a low productive base in the domestic economy influences the state of high NPLs in the banking system. The study revealed the need for collaboration between the research arm of monetary policy and financial stability departments in a bid to monitor risk in the financial system, which the entire banking system experienced around 2015-2017 that resulted in stringent measures adopted by the BSL to rescue the two state-owned commercial banks. Equally, vigilant approaches should be explored by the BSL authority that leads to (positive) structural changes in banks' approach to improving efficiency while at the same time minimizing continued risks to high NPLs and many more. The study finally recommends that ROA and ROE be adopted as independent indicators by the regulatory authorities to effectively

monitor performances across the banking industry, as this would help monitor unexpected shocks in the banking system.

Sani, Babangida and Muhammad (2022) establish the influence of credit risks on the profitability of listed Nigerian DMBs. The ex-post facto method was adopted and the researchers sampled eight (8) out of twenty-four (24) quoted DMBs on the Nigerian Group Exchange. Data was sourced from the audited annual accounts of the sampled DMBs for a period of four years, spanning from 2015–2019. OLS regression techniques revealed that non-performing loans (NPL) have an insignificant influence on the profitability of the sampled DMBs ($=-0.141$; $p, 0.797$). This implies that a 1% increase in NPL would lead to a 14% decrease in shareholders' value. Loan and advances (LAD) according to the regression models exert a significant influence on shareholders' value ($=7.341$; $p, 0.004$). This implies that an increase in LAD will lead to an increase in the shareholders' value. Nigerian banks should keep their loan and advance portfolios because it makes them more valuable to their shareholders.

Baze, Baze and Baze (2021) examined the effect of credit risk management on the financial performance of some listed Deposit Money Banks (DMBs) in Nigeria spanning the period 2015 - 2019. The study used Ordinary Least square (OLS) regression estimation technique. Findings of the study discovered that loans and advances has significant influence on Return on Asset ($p<0.05$). However, the study found Non-performing loans to have an insignificant association with ROA ($p>0.05$). Consequently, this study recommends that rigorous credit risk management practice should be encouraged by the regulatory authorities in order to ensure long term survival of deposit money banks in Nigeria. Furthermore, Nigerian DMBs need to put in place modern strategies to curtail their exposition to credit risk and improve their financial performance with a view of protecting the interest of investors and other stakeholders.

Asima, Muhammad and Zeeshan (2021) captured the effect of credit risk management and bank specific factors on South Asian commercial banks' financial performance (FP). The credit risk measures used in this study were NPLs and capital adequacy ratio (CAR), while cost-efficiency ratio (CER), average lending rate (ALR) and liquidity ratio (LR) were used as bank-specific factors. On the other hand, return on equity (ROE) and return on the asset (ROA) were taken as a measure of FP. Secondary data were collected from 19 commercial banks (10 commercial banks from Pakistan and 9 commercial banks from India) in the country for a period of 10 years from 2009 to 2018. The generalized method of moment (GMM) is used for the coefficient estimation to overcome the effects of some endogenous variables. The results indicated that NPLs, CER and LR have significantly negatively related to FP (ROA and ROE), while CAR and ALR have significantly positively related to the FP of the Asian commercial banks. The current study result recommends that policymakers of Asian countries should create a strong financial environment by implementing that monetary policy that stimulates interest rates in this way that automatically helps to lower down the high ratio of NPLs (tight monitoring system). Liquidity position should be well maintained so that even in a high competition environment, the commercial is able to survive in that environment. The present paper contributes to the prevailing literature that this is a comparison study between developed and developing countries of Asia that is a unique comparison because the study targets

only one region and then on the basis of income, the results of this study are compared. Moreover, the contribution of the study is to include some accounting-based measures and market-based measures of the FP of commercial banks at a time.

METHODOLOGY

3.1 Research Design

The study employed *ex-post-facto* research design to investigate the effect of credit risk management on corporate liquidity of deposit money banks in Nigeria. The use of *ex-post facto* research design is appropriate for this study as the data were collected from an existing document which the researcher attempted to manipulate. A number of authors acknowledged that this design as suitable when the data already existed and the researchers do not intend to change the state of the data (Onwumere, 2009).

3.2 Area of Study

The study focused on some selected banks in Nigeria from which the data required for a thorough analysis was derived.

3.3 Model Specification

The model used for the study was the adaptation and modifications of the work of Bencharles, and Nwankwo, (2021), who examined the impact of credit risk management on deposit money banks stability, their model is stated below

$$BP=F (CRM, NPL, LQR, CAR, LLP, BS, ACI). \dots\dots\dots(1)$$

BP= Bank performance

CRM = Credit risk management

NPL = Non-performing loans

LQR = Liquid ratio

CAR = Capital adequacy ratio

LLP = Loan loss provisioning

BS = Bank size

Audit committee independence (ACI)

Model one

To examine the effect of credit risk on net working capital of deposit money banks in Nigeria

$$NWC=F (INFL, CAD, NPL, SL, FREX). \dots\dots\dots(2)$$

NWC= f(CR)

Where

- NWC = Networking Capital
- INFL = Inflation rate
- CAD = Capital adequacy
- NPL = Non-performing loan
- SL = Size of Loan
- FREX = Foreign Exchange
- F = Functional Notation

The above equation can be put in an econometric form as;

$$NWC = b_0 + b_1 INF + b_2 Cad + b_3 NPL + b_4 SL + b_5 FREX + U \text{-----} (3)$$

Where;

- b_0 = Autonomous or Intercept.
- $b_1 - b_5$ = Coefficient of parameters
- U = stochastic Variable or error term.

DATA PRESENTATION AND ANALYSIS

4.1 Analysis of Data

Table 1: Descriptive Statistics

	Networking capital deposit money Banks					
	NWC	INFF	CAD	NPL	SL	FREXX
Mean	17.00725	10.61689	0.518889	330510.6	326273.3	255.6756
Median	19.90835	10.09000	0.110000	484121.5	512567.0	279.4400
Maximum	20.58567	19.01000	15.00000	789987.0	754789.0	359.7400
Minimum	6.484958	2.220000	0.010000	1.693147	2.034931	157.0200
Std. Dev.	3.719901	4.491499	1.891885	305219.9	297792.0	78.94726
Skewness	-0.611979	0.116120	6.487328	-0.074347	-0.135847	-0.094814
Kurtosis	2.250118	1.852378	46.17566	1.185762	1.135513	1.416621
Jarque-Bera Probability	7.726492 0.021000	5.141141 0.076492	7621.798 0.000000	12.42589 0.002003	13.31299 0.001286	9.536430 0.008496
Sum	1530.653	955.5200	46.70000	29745958	29364594	23010.80
Sum Sq. Dev.	1231.552	1795.447	318.5513	8.29E+12	7.89E+12	554707.6
Observations	90	90	90	90	90	90

The summary statistics show that the average mean of net-working capital is about 17.0, inflation rate is 10,6, while averages mean of capital adequacy, non-performing loan, size of loan and foreign exchange were 0.518889, 330510.6, 326273.3, 255.6756 respectively. The standard deviations of corporate liquidity variables such as networking

capital, inflation rate capital adequacy, non-performing loan, size of loan and foreign exchange respectively are. 3.719901, 4.491499, 1.891885, 305219.9, 297792.0 and 78.94726. The values of the standard deviations indicate that there is wide spread in the networking capital in Nigeria. This is also evident in the wide gap between the maximum and minimum values. For example, the maximum value of networking capital is 20.58567 while the minimum is 6.484958, with difference of 14.1. Similarly, the maximum of inflation is 19.01000 while the minimum is 2.220000. These performance variations are rather on the high side. Even in the case of capital adequacy the maximum is 15.0000 and the minimum is 1.01000. It is equally observed that non-performing loan varied widely over time. For instance, non-performing loan is 789987.0 while its minimum value is 1.693147. The wide variation over time indicates high level of fluctuation of credit risk management which affects corporate liquidity.

4.2 Model Estimation

Credit risk Management and Net working capital

Table 2: Result of the effect of inflation rate on Net working capital

$$NWC = b_0 + b_1 INF + b_2 Cad + b_3 NPL + b_4 SL + b_5 FREX + \mu$$

Correlated Random Effects - Hausman Test

Equation: Untitled

Test period random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Period random	3.566669	5	0.6133

** WARNING: estimated period random effects variance is zero.

Period random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
INF	-0.003489	0.002458	0.000289	0.7263
CAD	0.062073	0.010796	0.000939	0.0943
LNPL	-0.301161	-0.276871	0.009606	0.8043
LSL	0.776819	0.754738	0.007840	0.8031
FREX	-0.427145	0.002172	0.725264	0.6142

Source: Extract from Output generated using Eviews 9

The results on Table 2 are the regression analyses of the model for the effect of effect of inflation rate on Net working capital of deposit money banks in Nigeria. Regression results were produced using both the Fixed Effect Model (FEM) and the Random Effect Model (REM). Hausman test was employed to determine which of the FEM and REM is most appropriate for the interpretation. The Hausman statistics (Chi-square) value of 7.1607 (0.0669) is greater than 0.05, therefore, the null hypothesis that random effects is preferred is not rejected. Thus, the Random effect model is chosen for analysing the effect of inflation rate on Net working capital of deposit money banks in Nigeria.. This implies that both time trends but the individuality of the selected firms are recognised (factored

in) in explaining the effect of inflation rate on Net working capital of deposit money banks in Nigeria.

Period random effects test equation:

Dependent Variable: LNWC

Method: Panel Least Squares

Date: 03/11/23 Time: 09:41

Sample: 2012 2021

Periods included: 10

Cross-sections included: 9

Total panel (balanced) observations: 90

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.127646	217.7387	0.563816	0.5746
INF	-0.003489	0.062331	-0.055982	0.9555
CAD	0.062073	0.114041	3.544308	0.0078
LNPL	-0.301161	0.434789	-0.692661	0.4907
LSL	0.776819	0.380136	2.043529	0.0445
FREX	-0.427145	0.851629	-0.501562	0.6174

Effects Specification

Period fixed (dummy variables)

R-squared	0.761951	Mean dependent var	17.13448
Adjusted R-squared	0.717515	S.D. dependent var	3.547809
S.E. of regression	1.885636	Akaike info criterion	4.257419
Sum squared resid	266.6716	Schwarz criterion	4.674054
Log likelihood	-176.5838	Hannan-Quinn criter.	4.425430
F-statistic	17.14722	Durbin-Watson stat	1.532027
Prob(F-statistic)	0.000000		

Source: Extract from Output generated using E-views 9

The coefficient of determination (R-squared) is 0.761951. This indicates that about 76% of changes in new working capital can be explained by corporate liquidity such as inflation rate, capital adequacy, non-performing loan, size of loan, foreign exchange rate. This revealed that a substantial proportion (76%) of the factors that influence or determine new working capital is captured by corporate liquidity strategy. This implies that new working capital can be used to determine extent of corporate liquidity for banks in financial sector. Result of the F-statistics (17.14722) with p.value (0.0000) less than 5% be rejected. This concludes that the cumulative effect of corporate liquidity strategy (inflation rate, capital adequacy, non-performing loan, size of loan, foreign exchange rate) is statistically significant to determine corporate liquidity in Nigeria.

Furthermore, coefficient of regression explains the individual contributions of the firm net working capital on corporate liquidity. The coefficients for CAD (0.062073) and LSL (0.776819) revealed that capital adequacy and size of loan have positive relationship with net working capital. However, inflation (-0.003489), LNPL (-0.301161) and FREX (-0.427145) have a negative relationship. The results of the p.values for CAD and LSL are all greater than 0.05 level of significance. Thus, capital adequacy and size of loan each has significant positive effect on corporate liquidity of deposit money banks in Nigeria.

The regression equation is thus restated as; The study found that Credit risk management variables have a significant positive effect on net working capital in Nigeria. The implication of these findings is that, for Credit risk management strategies to be functional to achieve their aim and purposes, net working capital need to satisfy the expected needs of the firm, and must be seen to be fair or equitably satisfying to the deposit money bank. This further agreed with the findings of Kajola, Adedeji, Olabisi & Babatolu (2018) who examined the effect of credit risk management on financial performance of Nigerian listed deposit money banks, found increase in Credit risk management variables reduces the debt ratio of deposit money banks in Nigeria.

CONCLUSION AND RECOMMENDATIONS

Capital adequacy and size of loan as credit risk management variables have positive but significant effect on networking capital of deposit money banks in Nigeria, while inflation rate, non-performing loan and foreign exchange rate has an insignificant negative effect. This study is in line with the study of Ndifon & Ubana (2014) who found that positive and significant relationship between capital adequacy and banks' profitability suggest that banks with more equity capital are perceived to have more safety and such advantage can be translated into higher profitability. Aliu, A.A., Abdullahi, & Bakare, (2020) found that Results showed that loans and advances (LAD) have a positive and significant effect on the financial performance of DMBs with international authorization in Nigeria.

The study examined the effect of credit risk management on corporate liquidity of deposit money banks in Nigeria. The study found out that Capital adequacy and size of loan as credit risk management variables have positive but significant effect on networking capital of deposit money banks in Nigeria, while inflation rate, non-performing loan and foreign exchange rate has an insignificant negative effect. Capital adequacy and non-performing loan as credit risk management variables have positive and significant effect on debt ratio on deposit money banks in Nigeria, while inflation rate, size of loan and foreign exchange rate has an insignificant effect. Non-performing loan and size of loan as credit risk management variables have positive but significant effect on short-term debt on deposit money banks in Nigeria, while inflation rate, capital adequacy and foreign exchange rate has an insignificant negative effect. Capital adequacy and size of loan as credit risk management variables have positive and significant effect on quick ratio on deposit money banks in Nigeria, while inflation rate, non-performing loan and foreign exchange rate has an insignificant negative effect. Lastly, Capital adequacy and non-preforming loan as credit risk management variables have positive and significant effect on current ratio on deposit money banks in Nigeria, while inflation rate, size of loan and foreign exchange rate has an insignificant negative effect. Banks 'management should endeavour to develop rigorous and robust credit policies that will enable them to efficiently and effectively assess the creditworthiness of their customers thus, minimizing the incidences of non-performing loans. Capital adequacy of banks should be closely monitored in such a way that it will not be less than the minimum Central Bank of Nigeria provision. With this, the financial health and strength of banks will not be jeopardized.

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