



**SCHOOL OF ECONOMICS, BUSINESS AND
COMPUTER-SCIENCE.**

**EVALUATING THE IMPACT OF CREDIT RISK
MANAGEMENT ON THE FINANCIAL PERFORMANCE OF
COMMERCIAL BANKS IN NIGERIA**

AKINBO-BALOGUN ELIZABETH OMOBOLANLE

JANUARY,2022



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**Dissertation which was submitted for obtaining a distance
postgraduate degree in Banking, Investment and Finance (M.Sc.) at
Neapolis University**

AKINBO-BALOGUN ELIZABETH OMOBOLANLE

(JANUARY,2022)

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VALIDITY PAGE

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**Postgraduate Dissertation title: EVALUATING THE IMPACT OF CREDIT RISK
MANAGEMENT ON THE FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN
NIGERIA**

This Postgraduate Dissertation was prepared in the context of the studies for obtaining a distance master's degree at Neapolis University and was approved on..... [date of approval] by the members of the Examination Committee.

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DECLARATION

I, AKINBO-BALOGUN ELIZABETH OMOBOLANLE, being fully aware of the consequences of plagiarism, declare responsibly that this paper entitled “EVALUATING THE IMPACT OF CREDIT RISK MANAGEMENT ON THE FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN NIGERIA”, is strictly a product of my own personal work and all sources used have been duly stated in the bibliographic citations and references. Where I have used ideas, text and/or sources of other authors, they are clearly mentioned in the text with the appropriate citation and the relevant reference is included in the bibliographic references section with a full description.

ACKNOWLEDGMENT

I would like to acknowledgement and appreciation goes firstly to my supervisor Psillaki Maria, for her who guidance and contributions during my project at respective phases. Secondly, I would like to acknowledge the effort of all my lectures who contributed to the success of my master's program.

My love goes to my parents (Mr & Mrs Akinbo), also my siblings (Bernice & Bernard) for all their supports alongside other families and friends that made this journey a smooth and enjoyable one.

Ultimately, I would like to give thanks to God Almighty for his consistent mercy and grace and I look forward to next level of my life with optimism

SUMMARY OF THE STUDY

The aim of this study is to evaluate the impact of credit risk management on financial performance of commercial banks in Nigeria using the CAMEL ratios to determine this, 10 years (2011-2020) financial performance of selected commercial banks in Nigeria were considered. The Capital Adequacy Ratio was the dependent variable while Management Ratio, Asset Quality ratio, Liquidity Ratio and Earnings Ratio were the independent variables.

While carrying out this research, the methodology used was a cross-sectional ratio analysis with respect to the respective bank's ratio performance for the selected period, while descriptive analysis was used to display the average performance furthermore, correlation analysis (Pearson correlation) was introduced to show the correlation between the independent and explanatory variables and ultimate the ANOVA where we deduced that dependent variable is explained by the explanatory variables. All these respective data analyses were employed to test the hypothesis of this study.

ABSTRACT

This study was carried out to evaluate the impact of credit risk management on the financial performance of selected commercial banks in Nigeria from (2011-2020) using CAMEL ratios. The CAMEL ratios acronym stands for: Capital adequacy ratio (CAR), Asset quality ratio (AQR), Management ratio (MR), Earnings ratio (ER), and Liquidity ratio (LR), these respective ratios was obtained from Bank focus data base. Quantitative analysis was the most appropriate research design for this study and the SPSS 25 (Statistical Package for Social Science) was used to evaluate the CAMEL ratios on a sample of selected six (6) commercial banks for a duration of 10 years, the output from this software which were descriptive, correlation and regression analysis methodology was interpreted to satisfy the hypothesis test for this study. The findings of this research showed that earnings ratio, liquidity ratio, management ratio showed positive influence on the bank's financial performance (CAR), but earnings ratio (ROA) had highest significant influence while AQR had a negative and low influence on CAR considering the relationship. However, this study concludes that, based on respective analysis done CAMEL can be used in proxy to determine the financial performance of commercial banks, therefore credit risk management has a significant impact on the financial performance of commercial banks.

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND INFORMATION

Financial regulations are the rules and guidelines that financial institutions must abide by for them to be accepted in the sector. The financial institutions are banks, insurances, brokerage firms, insurance etc. (Adam Hayes et al., 2021) which deal with monetary and financial transactions such as accepting deposits, processing loans, building investments and currency exchange. The primary goal of a financial institution is to ensure that there is liquidity in the economy by making sure that there is flow of fund from the savers to the borrowers because this would ensure that there is circulation of fund in the economy, other goals include risks transfer and liquidity of financial assets. The health of the financial system is determined by the financial performance of the institution which show the strength, weakness, liquidity also, profit earned for a period and if otherwise in the financial statements which are: statement of financial position, statement of profit and loss and other comprehensive income and statement of cashflow. The weakness of the financial statement could lead to possible risk for the institution.

Risk management is the process of evaluating and projecting financial risk, also it goes further to itemizing procedures to mitigate or avoid the impact of the risk on the organization. Financial risk faced by the institution result from changes that occurs in the market (forces of demand and supply) and other external factors which is beyond the control of the institution, but for the purpose of this study emphasis would be more on credit risk.

The credit risk occurs when the counterparty default in making payment in principal or interest or both at the agreed period leading to default risk which is a loss to the bank, in addition credit risk can also occur when customers' (borrowers) rating is deteriorating. Under the Basel accord, one of the unique differences between Basel I & II was (James & Julius., 2020) Basel II introduced credit risk of asset to determine the regulatory capital ratio. According to Basel II accord, banks need to manage the credit risk inherent in the entire portfolio as well as the risk in individual credits or transactions taking other risks into consideration, this would guide top management in determining customers that are too risky based on their established risk tolerance level. The aim of credit risk management is to ensure that banks can maximize their risk-adjusted rate of return by focusing on a certain credit risk exposure within an adequate parameter.

The commercial bank is a financial institution which render elaborate services such accepting deposit, issuing loan, asset management, advisory services, investment service, dealers, fiduciary services, payment services etc. and are highly regulated by Central Bank of Nigeria (CBN) in Nigeria. One of the primary incomes earned by the banks are the net interest incomes and this is derived from the different between the interest revenues (these revenues are earned from interest negotiated on loans issued out) and the interest costs (these are liabilities the banks are subjected to pay e.g. interest on deposit). The Nigerian commercial banks have different approval level of authorization which are international, national, and regional authorization however there are Islamic commercial banks which are regarded as non-interest making financial institutions.

Furthermore, the commercial bank performs an important role in the economy different from accepting deposits and giving loans they are also used to regulate the flow of fund in circulation by the government. There are two (2) major tool the government use to control the money in circulation which are monetary and fiscal policy. The commercial bank is used to carry the monetary policy, through Open Market Operation (OMO) where CBN sells or buy bonds to the banks, reserve ratio requirement, discount rate; all these government measures are achieved through commercial banks to ensure stability of the economy.

This research is carried out to evaluate the impact of credit risk management on the financial performance of commercial banks in Nigeria

1.2 STATEMENT OF THE PROBLEMS

Risks are uncertainties that are quantifiable, and it can be divided into two (2) which are systematic and unsystematic while risk management is the process of identifying, assessing, and controlling threat to the organisation capital and earning (Ben cole,2020). For this study emphasis would be made on credit risk management which is known to be one of the greatest threats to the financial stability of a commercial bank if not properly managed.

The main source of revenue for commercial bank comes from interest, while top management are negotiating transactions that enable them gain access to this potential interest(income) the going concern of the bank must be put in check as well this would enable them to able meet up with sudden withdrawal. For this reason, the following problems would be addressed in this research, a) how credit risk management can affect the financial performance of the commercial banks using the CAMEL ratio as a tool of achieve this objective b) we would find out if proper interpretation these ratios can affect the performance of the institution, c) problems of how ratios can be used to make predictions on commercial bank performance would be elaborated on amidst the major disadvantage of ratio. Ratio uses historical data as a base for prediction.

1.3 OBJECTIVES OF THE STUDY

The aftermath of this research work is to determine how stakeholder especially the top management survive their possible credit risk exposure.

The general objective of this research work is to determine the impact of credit risk management on the Nigerian commercial banks' financial performance but specifically we would understand

- i. The importance of credit risk management on the financial performance of the Nigerian commercial bank.
- ii. Evaluating the respective ratios and interpreting the impact on the financial performance of the commercial banks.
- iii. The relationship and influence of credit risk management on the financial performance of commercial banks in Nigeria
- iv. Ratios and how they can be used in making prediction on the financial performance of the Nigerian commercial banks.

1.4 RESEARCH QUESTIONS

Research is carried out with an inquisitive mindset for additional knowledge to be obtained or get acquainted with new theories and facts based on the information available. The research questions in relation to this study are as follow:

- i. Is there a relationship between ratios and prediction of the financial performance of commercial banks?
- ii. Does credit risk management influence the financial performance of Nigerian commercial banks?
- iii. To what extent does the importance of credit risk management affect the financial performance of commercial banks?
- iv. What impact does evaluation and proper interpretation of the respective ratios have on the financial performance of Nigerian commercial banks?

1.5 RESEARCH HYPOTHESIS

The follow hypothesis would be carried out to test the objective of the study where the (H0) is regarded as the null hypothesis indicating no significant relationship and the (H1) which is the alternate hypothesis would indicate the significant relationship between the variables. The follow tests are:

i. Hypothesis one

H0: credit risk management has no significant influence on the financial performance of commercial banks

H1: credit risk management has significant influence on the financial performance of commercial banks

ii. Hypothesis two

H0: Proper evaluation and interpretations of the CAMEL ratios has no significant impact on the financial performance of Nigerian commercial banks

H1: proper evaluation and interpretation of CAMEL ratios has significant impact on the financial performance of Nigerian commercial bank

iii. Hypothesis three:

H0: Ratios has no significant impact on prediction of financial performance of commercial banks.

H1: Ratios has significant impact on prediction of financial performance of commercial banks.

iv. Hypothesis four:

H0: credit risk management and its importance have no significant impact on the financial performance of commercial banks.

H1: credit risk management and its importance have significant impact on the financial performance of commercial banks.

1.6 IMPORTANCE OF THE RESEARCH

Financial performance of a bank indicates the strength and weakness of the financial health of the financial institution (commercial bank). The quantitative measure would be most appropriate for analyzing the commercial bank performance because it would identify the impact of credit risk management measurement on the financial performance of the bank.

Also, the study would elaborate on credit risk management and how stakeholder especially the top management can identify possible credit risk exposure and how to manage it. One of the causes of the global financial crisis which led to the great recession in 2007-2008 was because of poor management of the credit risk, but this study would go further to interpret the respective ratios and the effect on the financial performance of the Nigeria bank.

Ultimately, this research would contribute to the existing review done in relation to this work by elaborating and including recent review and information for future research on the subject matter

1.7 ORGANIZATION OF THE STUDY

The research would be divided into five chapters:

Chapter one: This would include introduction, statement of the problem, objective of the study, research problem, research hypothesis and importance of the study

Chapter Two; literature review of this study would be addressed in this chapter where emphasis would be made on the conceptual finding on credit risk management also the theoretical framework would be reviewed by examining related existing research work to this study.

Chapter Three: focus would be made on the research methodology used, the population sample, definitions of variables, research design adopted, type of data, research instrument, validation and reliability of the research instrument evaluated, data analysis and definition of the ratios adopted.

Chapter Four: Summarization, presentation, interpretation of data analysis carried out in chapter three (3) would be discussed here including test of hypothesis

Chapter Five: conclusion, recommendation and stating out findings made during the study

LITERATURE REVIEW

2.1 CONCEPTUAL FRAMEWORK

2.1.1 DEFINITION OF COMMERCIAL BANK

According to Prof. Ashutosh Nath, “commercial bank is an intermediary profit-making institution”. Its primary function is accepting deposits and lending out loans to its customers, but modern commercial banks have included other functions (services) some are: maintaining Automated Teller Machines (ATM) and issuing ATM cards, collection and payment of financial instrument, remittance transaction, foreign exchange transaction, advisory services, also they render guarantor services.

2.1.1.1 ROLE OF COMMERCIAL BANKS IN THE ECONOMY

The commercial banks are known for rendering financial services to respective sectors and these services have impacted on the economy as follows:

- Mobilization of capital across the economy.
- Implementation of monetary policy of the government.
- They encourage internal and external trade development.
- They assist in financing the government that is deficit budget.
- Banks are always ready to take risk when it comes to lending money
- Creation of job opportunities.

2.1.1.2 EXPLANATION ON SPECIFIC ITEMS ON THE FINANCIAL STATEMENT OF A COMMERCIAL BANK

• ASSET

Assets are referred to as economic resources used to create value. The assets of the bank are created from the liabilities obligated by the bank and can be divided into two (2), current asset and non-current assets. Assets of bank include Cash and cash Equivalents, US Treasuries, municipal Bonds, asset-Backed Securities, loans and plants and machinery, this arrangement is based on how liquid the assets are or can be converted into cash compared to normal business arrangement where cash is usually the last item under the assets categories.

• LIABILITY

The liabilities are the obligations of the bank, they are used to obtain assets which in return earn income for the bank. Liabilities include the checkable and savings deposit, fixed deposits, certificate deposits, borrowings from other banks which are known as source of fund to the bank to finance possible project or create future wealth where no or little interest is paid to individual. In simple terms they are debt to the bank which can be withdrawn at any time based on the individual discretion (deposit) so the bank must ensure that there is a cushion to avoid possible mismatch.

• NET INTEREST INCOME (NII)

This is the excess of revenue earned over the expense incurred by the bank for a specific year ended. The revenue earned are from interest bearing assets which arise from loans (person or commercial), mortgages etc. while interest bearing expenses are compensation the bank give out for cash brought by respective individuals or businesses e.g., deposits (fixed, savings) etc. however the interest paid or earned can be either at a fixed rate or variable rate. To achieve a net

interest income, this is determined by the quality of the loan portfolio, but this can as well be negative because of other administrative cost at the bottom line

- **NET INTEREST MARGIN(NIM)**

The net interest margin is a measure of the bank or any financial institution profitability and growth over the years which is represented in percentage. The difference between the net interest income and net interest margin is that net interest income is the numerator of the net interest margin in relation to the average interest generating assets held by the bank. Most institution uses this ratio as a performance indicator over time thus the higher it is the better for the bank although this ratio is influence by the supply and demand of loans as well monetary policy of the government, relatively the average trend has been 4.3% (Sean & Ebony.,2021)

2.1.2.0 RISK

2.1.2.1 DEFINITION

Risk is the possibility of adverse event occurring. Relating risk to the financial sector, this is the possibility that there would be deviation on the return on investment from the estimated gain which usually have a negative effect on the investment. Although this risk can be minimized through risk management because it involves the process of identifying, evaluating, and managing potential risk to minimize its impact on the investment return or outcome

2.1.2.2 WHY DO COMMERCIAL BANKS FACE RISKS?

commercial banks face risks because their activities involve giving out of loans to respective sectors which require proper due diligence to avoid possible adverse selections or moral hazard in the future, they manage public fund and convert them into assets and at any time this fund can be requested, this situation exposes them to risk if they are not able to meet up with the demand also, they engage in foreign transaction, this exposes them to unpredictable risk if there is an adverse change in the market condition. Furthermore, for them to be regarded as a functioning institution they must meet up with the minimum regulatory requirement while trying to increase the wealth of their shareholder as well as ensuring the profitability of the bank. this makes the institution prone to various types of risk which would be discussed 2.1.2.3

2.1.2.3 LIST OF POSSIBLE RISKS FACED BY BANKS

- **MARKET RISK**

Market risks are financial loss the financial institution encounter due to adverse movement in market prices on traded financial instrument. (Steven and Hans., 2020) This risk has four major sources which are interest rate, equity price, foreign exchange, and commodity.

- **INTEREST RISK**

This is one of the market risks that occurs due to fluctuation in the interest rate, this risk is measured based on its impact on the bank's earning or capital. The unpredictable change that reduces the net interest income of institution indicates that the bank's earning is at risk while the change in interest rate that reduce the market value of the entity indicate that the capital of the bank is at risk (OCC.gov., 19962), however the bank makes its decision on the adverse movement of interest rate considering its impact either on the net interest income or the market value of equity not on the risk at the same time. Interest risks create other risk as; re-investment

risk, repricing risk, basis risk, yield curve risk, option risk leading to mismatch of assets and liabilities.

- **CURRENCY RISK**

Currency risk is also referred to as foreign exchange risk which is one of the sources of market risk. The financial institution faces this risk as result of unfavorable change in the exchange rate when translating foreign account to domicile currency, which is referred to as translation risk while carrying out operating or investing transactions. Furthermore, banks consider the impact of this risk either on their profitability or the market value of the shareholders' equity (OCC.gov.,19962) considering the position they hold which could be net long or net short in various currencies also it is of importance to note that hedging is one of the ways of mitigating currency risk but it requires matching the foreign assets and liabilities maturities as well if not the institution would still be exposed to foreign exchange risk.

- **LIQUIDITY RISK**

Commercial banks are expected to be liquid at every point in time because of the type of services they render to the public especially to depositors who make withdrawals at their own discretions however, being too liquid is costly because the bank would not be earning any interest on it. Liquidity risk occurs when banks are not able to meet up with their obligations without incurring unreasonable loss, or (OCC.gov., 1996-2) the inability of a bank to be able to liquidate their assets on time incurring minimal loss due to the market condition of the asset, this risk could occur due to bank runs, decrease in funding source, off-setting of balance sheet item etc. leading to, fire sales of banks assets or borrowing additional fund. Furthermore, an unmanaged liquidity problem could lead to solvency risk where the capital of the bank is unable to absorb the decline in the asset value relating to liabilities, this could force the bank to file for bankruptcy. This risk is addressed by the bank based on its impact on either earning or capital of the bank respectively.

- **PRICE RISK**

Price risk is the fall in the value of a security or portfolio of an investment which directly affects the interest rate, foreign exchange, equity, and commodities because it involves; taking positions transacting and marking to market of these variables to either enhance the wealth of shareholders or increase the profitability of the bank. (OCC.gov., 1996-2) This risk considers the change in interest rate, liquidity and volatility of the financial instrument traded although banks calculate their risk based on its impact on earning or capital of the bank however price risk can be mitigated through diversification

- **CREDIT RISK**

This is the most common risk that is familiar to the banking sector. Credit risk is when the counterparty or the borrower default in performing his obligations as stated in the contract, this risk can arise at any time so far as the bank is involved in any contractual investment, trading, commitment, or off-balance sheet activities. This risk goes beyond normal bank's activities, it also includes trading on financial securities (derivatives), portfolio investment and foreign exchange transactions furthermore, credit risk is not limited to financial institution it extends to country risk, where one country is unable to pay for its borrowings often due to weak position of the currency, failing government etc. this risk is also known as sovereign risk. (OCC.gov,1996-2)

Ultimately bank address this risk by observing if their earnings is at risk or capital is at risk.

- **OPERATIONAL RISK**

This risk arises from the inadequacy or failure of the bank's process, employee, and system. It is referred to as transaction risk which result in errors or break down that occurs when banks are carrying out their day-to-day activities leading to bank with respect to the institution's product or services thereby putting the bank financial performance or capital at risk. (OCC.gov., 1996-2)

This loss can erupt from internal or external source; external strike on the bank arises when outsider uses the loopholes in the banking system to extract money from the banking system illegal leading to bank's loss while internal loss occurs due to poor internal control of the bank, employee error or unproductive machinery.

- **OFF BALANCE SHEET RSK**

Off balance sheet is a new types that risk that affect the financial institution due to contractual (Fabrice Tchakounte Kegninkeu(2018) agreement the institution signed although this obligation is not recorded on the face of the account except when the liability can be reasonably estimated, examples are; loan commitment, letter of credit etc.0000 this would increase the risk of the bank, which would be threatened based on its direct impact on the performance growth or the sustainability of the bank.

- **REPUTATIONAL RISK**

This risk looks at the negative opinion of the public on the financial institution. Banks have a fiduciary duty of ensuring that any service or product attached to their franchise much have undergone due diligence to ensure that it is save for the public or community to use the platform to carry out their transaction if otherwise, this could lead to financial loss and litigation cases against the institution because most people uses this alternate channel of banking because of the trust in their brand this make banks vulnerable to attacks as this risk would have a negative implication either on their earnings growth or capital appreciation (OCC.gov., 1996-2)

- **COMPLIANCE RISK**

Bank runs a risk of variation in earning or capital reduction due to non-compliance with rules, laws, regulatory standards etc. (OCC.gov., 1996-2). they are exposed to these risks because they create wealth from public fund to run the institution also the banking sector is one of the effective institutions that ensure the flow of fund and implementation of government policies so therefore they are of importance to be monitored and checked to ensure that they operate within their license scope not engage in ambiguous activities.

2.1.3 CREDIT RISK MANAGEMENT

2.1.3.1 DEFINITION OF CREDIT RISK MANGEMENT

Credit management is the process organization put in place to monitor and ensure collection of debt when due while abiding with the credit policies, operating within established level of risk tolerance, setting the terms of payments, and putting in measure to avoid default furthermore, credit risk management can be regarded as a proactive credit measure to identify potential risk, estimate possible losses and establish continuous follow-up to ensure that obligations are made when due (Euler Hermes USA.,2021). Banks are prone to credit risk because they are considered as the major source for lending, therefore credit risk management is invested in to ensure that there is flow of fund and profitability of the institution.

2.1.3.2 IMPORTANCE OF CREDIT RISK MANAGEMENT

Credit risk management is important because of the following:

- Adequate credit risk management ensure that the financial health of the organization is not deteriorating
- It ensures that bad debt is properly managed by maintaining an adequate provision for doubtful for unforeseen able losses
- It serves as a guide to organization during cherry picking of potential borrowers by ticking all the boxes to ensure they are worthy of the loan.
- Credit risk management is important as adequate review of this system would ensure that the organization is not exposed to other risks like liquidity risk, compliance risk etc.
- It assists the organization to be strategic on the risk they are about to embark on when giving out loan by relating to the nature or characteristics of their existing liabilities or capital.

2.1.3.3 CREDIT ASSESSMENT IN THE BANK USING THE 5Cs

Credit assessment in the bank is an evaluation the financial institution performs on borrowers of fund to determine their ability of paying back with reference to the term and condition of the bank. This assessment is accomplished by using the 5Cs which are character, capacity, condition, collateral, and capital. This is explained further in 2.1.3.3.2

2.1.3.3.1 IMPORTANCE OF THE 5Cs

The 5Cs are the measures the lender uses to analysis the risk involves in giving out loan to minimize future loss or avoid loan default. This analysis is important to the bank because it assesses eligibility and creditworthiness of the borrower of fund

2.1.3.3.2 VARIABLES DEFINITION OF THE 5Cs

- **CHARATER**

Character considers firstly (Tracy Sheppard., 2021) the credit pattern and history of the borrower, looking at how often he has been able to meet up with his obligations over the years and if at any point in time he has filed for bankruptcy this is to determine the integrity of the borrower. Also, the bank goes further to know if the borrower has the skill, business plan, expertise, and educational background to carry out the business he is investing the loan into. Lastly this also considers the guarantor of the borrower as well

- **CAPACITY**

This analyses the ability of the borrower to meet up with the payment of the loan referencing existing debt of the borrowers. The cash flow of this business is important at this stage as the bank would also like to know how he would be able to manage his administrative expenses as well, most lenders would likely give loan to borrower with low Debt to Income (DTI) ratio. (Troy Segal et al., 2021)

- **CONDITION**

This credit assessment addresses the borrower's additional source of income, the interest on the loan payment and the capital requested to determine if he can meet you with his obligation. Also, the industry the borrower wants to invest in, the bank would like to how the cyclical turns of the business with respective to the economy and if there is a possibility of low demand or dissolution of the business leading to loan default. (Tracy Sheppard., 2021)

- **COLLATERAL**

This is a form of securing repayment of the loan collected. The bank considers the personal and business assets of the borrower depending on the type of loan collected this is referred to as a secured loan, in case of possible default the bank goes further to determine the market value of (Tracy Sheppard., 2021) the asset's collateral, however, a collateral with high market value attracts low interest to the borrower. (Troy Segal et al., 2021)

- **CAPITAL**

The capital of the 5Cs looks at the other capital would be included in the business excluding the bank's loan. A borrower including his own personal down payment which goes beyond capital, but assets as well shows the extent to which the borrower is ready to take risk also it gives room for reduction in the rate that would be charged on the loan requested. (Tracy Sheppard., 2021)

2.1.3.4 WAYS OF MITIGATING CREDIT RISK

- **COVENANT POLICY**

This is an agreement between the borrower and lender while signing off the contract whereby the lender would state some condition or forbid the borrower from engaging in action thereby increasing his risk portfolio which might lead to loan default. The covenant policy may include that the borrower is not allowed to acquire any debt or placing a limit on the obligation the borrower can obtain. (Fabrice.T. Kegninkeu., 2018)

- **SPECIALIZATION IN LENDING**

In this scenario, specialists are contacted to carry out the lending to the borrower there by reducing the cost for the bank i.e., information cost because this lender are abreast with information with respect to specific industries depending on the industry or geographic area the borrower want to invest his fund, this not only mitigate credit risk but also adverse selection as well. (Fabrice.T. Kegninkeu., 2018)

- **RELIABLE INFORMATION**

This mitigation involves the bank carry out a due diligence on the borrower by going through his financial statement, credit history, credit pattern etc. also the bank would ensure that the loan is within the risk tolerance level of the institution. Furthermore, reliable information goes further to, the capacity of the borrower, the authentication of the collateral provided as well as the market value, the current condition of the economy regarding the business plan and lastly his personal investment is ready to plough into the business. (Fabrice.T. Kegninkeu., 2018)

- **SCREENING AND MONITORING**

This is process is performed to avoid adverse selection and moral hazards. Screening is a way of cherry-picking borrowers who have genuine reasons for collecting the loan while monitoring is way of following up with the borrowers after the fund has been given to ensure that it is used for the purpose it was collected to avoid loan default.

- **LONG TERM RELATIONSHIP**

Relationship between the bank and borrower must have been for a meaningful duration with respect to the cashflow of the client account i.e., checking account and savings account also reviewing the history of his past records to determine the creditworthiness of the client. This is just a principle of know your customers were the profile, identity and the financial status of the client is examined, in addition a client with a long relationship with a bank is likely to get a lower interest charge on the proposed fund. (Graydon., 2021)

- **LOAN COMMITMENT**

This is where the lender (financial institution) has a contractual agreement with the borrower to reimburse him with a specific amount when the demand is made. This enables the borrower to have more addition capital and build a enhance the relationship with between the borrower and the lender for future loan if the need arises.

- **CREDIT RATIONING**

Credit rationing is setting a limit on the loan, the lender restricts the credit based on the credit policy or the risk tolerance of the bank irrespective of the interest rate. This policy put in place to avoid moral hazards also a higher interest could lead to the failure of the project based on their review of which the borrower uses this to compensate the lender. (Fabrice.T. Kegninkeu., 2018)

- **COMPENSATION BALANCE**

Compensation balance is where the lender has an agreement with borrower to have a certain amount in his account especially his current account. This guarantees the likelihood of payment and help the bank to monitor the project, this method reduces possible credit risk for the bank.

- **COLLATERAL REQUIREMENT**

This is a form of secured loan for the bank. Under this credit risk management, the borrower is required to bring his asset which would be acquire by the bank in the event of default, this mitigation guide the lender against moral hazard as well adverse selection because the borrower knows that he has a lot to lose if he does not meet up with his obligations

2.1.4 FINANCIAL STATEMENT ANALYSIS (CAMEL)

2.1.4.1 DEFINITION OF FINANCIAL STATEMENT ANALYSIS (CAMELS)

Financial statement analysis is a quantitative measure that shows the soundness and financial health of the organizational performance. This involves the credit assessment of banks by interpreting the liquidity, profitability, capital strength and quality of the loan portfolio status of the financial institution using CAMELS.

2.1.4.2 CAMELS RATING

2.1.4.2.1 INTERPRETATION OF CAMEL RATING

CAMELS is analytical tool the banks use to determine the creditworthiness of a bank. This tool is interpreted as follows:

C- Capital adequacy

A-Asset quality

M-Management capacity

E- Earning

L-Liquidity

S-Sensitivity

The addition of this tool determines the creditworthiness of bank and give further information of the possibility of the bank going bankrupt, so therefore it is a supervisory tool used to put the institution to check. CAMELS rating on financial institution this is done on a scale of 1-5, a lower rating portrays a better positioning of the institution reasons why most bank aim for 1, while 2 shows a sense of weakness, 3 requires supervisory concern, 4 signify that the institution is facing financial problems while 5 is the worst and indicates a potential possibility of a bank defaulting due to fundamental problems (CFI education Inc.,2021) leading higher premium too.

2.2 EMPIRICAL FRAMEWORK

The empirical framework showed the related research work that has been carried out on credit risk management in relation to the financial performance of commercial banks. They are as follow:

Taiwo JN et al. (2017) conducted research on credit risk management to determine the implications on the bank performance and lending growth on the Nigeria's Deposit Money Banks (DBN) for a period of 17 years (1998-2014). The multi linear regression model was adopted to analyse the time series data. The findings revealed that the credit risk management of the bank has not significant impact on the growth of loan and advance in the Nigeria's Deposit Money Banks (DBM) also it further established that a good credit management can improve the investors and savers confidence leading to growth in fund for loan and advance thereby increasing profitability of the banks.

Malihe Rostami (2015) investigated on the determination of camels' model on bank's performance. The data was obtained from the Iranian's bank annual financial report, during the research each category of the CAMELS model was interpreted and analysed while the Q-Tobin's ratio was employed as the dependent variable as a measure of performance indicator for the research, spanning for 9 years (2005-2014). The research concluded that there was significant relationship between each category of the CAMEL model and Q-Tobin ratio also banks can control and manage possible crisis by focusing on risk and other important ratio.

Rehman et al. (2019) studied the impact of risk management strategies on the credit risk faced by commercial banks of balochistan in Pakistan, which aimed at eliminating or mitigating credit risk. A qualitative research design was adopted using questionnaire and respond was obtained from 250 employees on four specific areas which were: diversification, hedging, capital adequacy ratio, corporate governance, and credit risk to perform multiple regression analyze for this study. It was concluded that adequate training and courses should be given to bank's employees on asset management risk, risk control and credit utilization for better performance of the bank.

Muhamet Aliu & Arbana Sahiti (2016) revealed that a higher risk asset ratio would cause a marginal decline in profitability also higher nonperforming loan has a positive and significant effect on bank's profitability while carrying out a study on effect of credit risk management on the bank's profitability in Kosovo. The data for this study was obtained from the annual report of the four (4) selected banks, where the profitability ratio was calculated (Return on Equity) as well as the non-performing loan and risk asset ratio showing a trend of 9 years (2006-2015) then SPSS software was used to analysis the data. The Multivariate regression model was adopted.

For further examination on the relationship of the variables, the simple linear regression was done alongside the trend analysis.

Konovalova N. et al (2016) focused on credit risk management in commercial bank and how credit risk and banking risk can be reduced in future by determining the level of risk associated with respective retail customers(borrowers), the data was obtained from Latvian commercial banks showing the statistic history of customer lending. The age, amount of loan, term of loan, sex, number of children, average income, and problem of repayment of the client was extracted from the data provided by the banks to carry out their research. Correlation matrix and regression analysis was achieved using excel as well as SPSS was employed to run the data. The findings showed that the income of the customer, amount of loan and term of loan are the significant factors that affect the credit risk of the bank.

Kwaku D. Kessey (2015) discussed about how credit risk management practices can be assessed in the banking Industry in Ghana; the operations challenge policies, strategies, and the implementation of credit risk management was the focus for this study. Primary data was obtained from operation staff on credit risk while the secondary data on bank's loan portfolio was retrieved from the journal and annual reports (2007-2011). The trend analysis was carried out to investigate the bank's performance within the period of review. It was discovered in Ghana that, banks that comply with the international standards and the established policies are efficient, while due to implementation challenges the quality of the loan portfolio is deteriorating.

Addo M. Kwabena (2014) identifies the challenges banks and customers of the banks goes through to have access to credit and loan facilities and their repayment while carrying out credit risk management research on commercial banks limited in Ghana. The data used for this study was both primary data (questionnaires and general observations) and secondary data (published reports and records that related to the commercial banks in Ghana) furthermore, a least square regression analysis adopted using the Eviews statistical package on 15 years (1995-2009) financial record obtained. ROE and ROA respectively were performance indicators while loan losses were used to measure the effectiveness of the credit risk management. The result showed that there is significant relationship between profitability and credit risk hence, good credit risk management leads to better performance however, there an inverse relationship between ROA and loan losses.

Abu Hanifa Md.Noman et al (2015) carried out an investigation on the credit risk management strategies and practice on private commercial banks in Bangladesh. This investigation involved the use of primary data (questionnaire) and their result was same with Kwaku D. Kessey (2015) using the descriptive statistic model, the sample banks that complied with the standards and guidelines requirements had a sound credit risk management also bank should focus on;

collateralization, accurate loan pricing and third party guarantee for credit risk measurement, lastly lack of trained personnel, credit officers, asymmetric information and moral hazard are the most important problems of current credit risk management.

Shahzad Karim (2019) comparative study on the influence of credit risk management adoption and strategy was carried out between United Arab Emirate and United Kingdom in relation to the respective commercial banks performance. Information on these banks were obtain using primary data where three major variables were identified: credit risk management strategies, factors influencing risk management and commercial bank profitability. The SPSS software and excel were employed to analysis the data where the logistics regression, descriptive statistics, diagnostic tests, graphical representation, and thematic analysis result showed significant differences in the credit risk management strategies, credit risk assessment and organizational profitability adoption between the financial institutions.

Ravi.P. Poudel (2012) the default rate, cost per and capital adequacy were the parameters examined to determine the impact of credit risk management on the financial performance of commercial bank in Nepal. The study employed descriptive, correlation and regression as the methodology to analysis the 11 years (2001-2011) financial report used for this study. Findings also showed that default rate is most significant predictor of the bank's financial performance.

Fabrice .T. Kegninkeu(2018) emphasis was made on evaluation of loan assessment in respect to the impact of credit risk management on commercial banks in Cameroon. The trend analysis revealed that Nonperforming loan (NPL) to total loan ratio is a good predictor of risk performance, and it is also significantly related to the performance of the bank while total loan to deposit and loan to total asset had an inverse relationship to the bank's performance. The secondary data used to obtain this conclusion which was derived from five (5) years financial statement of BICEC using ratio analysis.

Ghulam Saghir and Emad Tabassam Ch (2020) asserted that the credit risk has significant and negative impact on the financial performance of the banks in Pakistan, it also indicated that the lower the non-performing loan the lesser the risk using two major risk method liquidity risk and credit risk. Ten (10) years financial report panel data (2008-2018) was reviewed where the short run effect and the long run effects were tested on the financial performance of the bank using the Hausman test.

Olawale Luqman (2014) has analyzed the effect of credit risk on the performance of commercial banks in Nigeria by using secondary data of five (5) years (2008-2012). The NPL to loan and advances showed a negative relationship to profitability same as loan and advances to total deposit, because of this, it was concluded that there is a significant relationship between the bank performance (profitability) and credit risk management (loan performance) while adopting Ordinary Least Square (OLS) method of regression analysis using SPSS.

Bishnu Prasad Bhattarai (2019) reviewed the annual report of the listed banks on the Nepalese stock exchange for a period of 16 years (2001- 2016) using CAMELS. The SPSS was used to analyze the data, which tend adopted the descriptive and regression model. The findings of the

study concluded that the capital adequacy ratio (CAR), Non-performing loan ratio (NPLR), and Operating Income to total asset (MQR) have significant relationship with Earnings (ROA) of the commercial banks in Nepal while Cash to deposits ratio (CDR) and Risk Sensitivity (RS) have no significant impact on ROA.

Osama A. El-Ansary & Hassan M. Hafez (2015) examined the Egyptian commercial bank where the CAMEL, size(total assets), credit risk and Net interest Income were the variables considered. The CAR was the dependent variable while others were the independent variable for this study, spanning for Ten (10) years (2003-2013) using the secondary data obtained from Bank-Scope database. The methodology explored was the descriptive and multi regression analyses. The findings of the research under the period of review showed that liquidity, size(total assets) and management quality have the most significant relationship to the capital adequacy of the financial institution however before 2008 asset quality, size(total assets) and profitability were most likely determinant of CAR but after the financial crisis which occurred 2007-2008, in 2009 the most significant variables became asset quality, size(total assets), liquidity, management quality and credit risk were the explanatory variance of Egyptian banks' CAR. From this study we observed that size (total assets) has been constant for various period under review as a major significant determinant of CAR.

Ogilo Fredrick (2012) reviewed the impact of credit risk management on financial performance of commercial bank in Kenya, using CAMEL attributes where it was discovered that there is capital adequacy, asset quality, management efficiency and liquidity has a weak relationship to the financial performance of the bank (Return on Equity) only earnings (Return on Assets) that showed a strong relationship using the multiple regression analysis for a duration of five (5) years (2006-2010). The study source was a secondary data which was obtained from banking survey sector relating to Central Bank of Kenya publication

Hossain.M. Yeasin (2021) discussed about the impact of credit risk management on financial performance of commercial banks in Bangladesh, adopting a panel regression analysis model methodology. Secondary data was employed for this study examination also, the research considered a duration of Ten (10) years (2010-2019) data of the Return on assets (ROA), non-performing loan(NPL), capital adequacy ratio (CAR) and Loan to Deposit Ratio (LDR) of the selected commercial banks. Based on his analysis he concluded that LDR had a positive significant influence on the bank's performance while the other explanatory variables showed a negative significant influence.

Mubbushar (2016) carry out Ten (10) years (2005-2014) study on the impact of credit risk management on commercial banks in Pakistan where the two dependent variables were ROE and ROA. Using the panel regression model, he concluded that credit risk management has significant impact on the financial performance of Pakistan commercial bank using non-performing loan and capital adequacy as the explanatory variable furthermore, he employed the secondary data of the annual financial report banks as the data source.

SUMMARY OF THEORETICAL FRAMEWORK

S/N	Author	Title	Methodology used	Scope of study	Findings
1.	Taiwo JN et al. (2017)	Credit Risk Management: Implications on Bank Performance and Lending Growth	The methodology employed multiple linear regression model to analyse the time series data	1998-2014	The researchers discovered that credit risk management has no impact on the growth of total loans and advance
2.	Malihe Rostami (2015)	Determination of Camels model on bank's performance	The Eviews and Microsoft excel software was used to analyse the data	2005-2014	The findings showed that there was significant relationship between each CAMEL model categories and Q-Tobin ratios which served as the bank's indicator
3.	Rehman et al. (2019)	Impact of risk management strategies on the credit risk faced by commercial banks of Balochistan	Multiple regression methodology was adopted	2019	The conclusion made from the study showed that corporate governance, hedging, diversification and capital adequacy ratio have significant impact on credit risk
4.	Muhamet Aliu & Arbana Sahiti (2016)	The Effect of Credit Risk Management on Banks' Profitability in Kosovo	A time series data as well as multivariate regression model using SPSS software. Furthermore, a simple linear regression was done together with the trend analysis	2006-2015	The outcome of the study showed that there is partial linear relationship between credit risk management indicators and profitability indicators

5.	Konovalova N., Kristovska I., & Kudinska M. (2016)	Credit risk management in commercial banks	Regression analysis and correlation matrix	2016	The result summary showed that bank's credit risk is significantly affected by the average income of the borrowers, the amount of loan and loan term given to retail client.
6.	Kwaku D. Kessey (2015)	Assessing Credit Risk Management Practices in the Banking Industry of Ghana	The trend analysis was employed on the variables	2007- 2011	The result showed that the credit risk management policies that conform with international standards and laid out policies and strategies are satisfactory, but implementation challenges are worsening the quality of the loan.
7.	Addo Boye Michael Kwabena (2014)	Credit Risk Management in Financial Institutions	least square regression analysis model was adopted using the Eviews statistical package	1995- 2009	The study findings showed that there is a significant relationship between bank performance taking into consideration profitability and credit risk management that is loan performance

8.	Abu Hanifa Md.Noman, Md. Amzad Hossain & Sajeda Pervin (2015)	An Investigation of Credit Risk Management Strategies of Private Commercial Banks of Bangladesh	A descriptive statistics model was employed	2015	The research result showed that the commercial banks are efficiently managing their credit risk also, it was discovered that the use of credit risk grading is effective for measuring the borrowing capacity of a borrower
9	Shahzad Karim (2019)	The Influence of Credit Risk Management Strategies on the Performance of Commercial Banks	Using excel and SPSS the logistic regression and descriptive result was adopted	2019	The result showed significant differences in the credit risk management strategies, credit risk assessment and organizational profitability adoption in the different financial institutions.
10	Ravi Prakash Sharma Poudel (2012)	The impact of credit risk management on financial performance of commercial banks in Nepal	Correlation and regression were used as the methodology for this study.	2001-2011	The default rate is a good predictor for bank financial performance.
11	Fabrice Tchakounte Kegninkeu(2018)	The Impact of Credit Risk Management on the Performance of Commercial Banks in Cameroon. Case Study of BICEC Cameroon	The trend analysis was applied	2007-2011	The findings showed that NPL to total loan ratio has a significant relationship to the bank performance on credit risk management.
12	Ghulam Saghir and Emad Tabassam Ch (2020)	Risk Management& Financial Performance of	Hausman test was employed on the data	2008-2018	Findings showed that credit risk has negative significant impact on the performance of the bank, thus the lower the

		Commercial Banks in Pakistan			non-performing loan, the lesser the risk faced.
13	Olawale Luqman Samuel (2014)	The effect of credit risk on the performance of commercial banks in Nigeria	Ordinary least Square (OLS) method of regression analysis using SPSS	2008-2012	There is significant relationship between the profitability of the bank and credit risk management of the commercial bank
14	Bishnu Prasad Bhattarai (2019)	Effect of credit risk management on financial performance of commercial banks in Nepal	Descriptive and regression model method were employed using SPSS	2001-2016	Using the CAMELS, Capital adequacy ratio, Management ratio and non-performing loan has significant relationship with Earning while Liquidity and Risk sensitivity is insignificant to the financial performance of the commercial bank
15	Osama A. El-Ansary & Hassan M. Hafez (2015)	Determinants of capital adequacy ratio: an empirical study on Egyptian banks	Descriptive and multi regression analyses were utilized for this study	2003-2013	Using CAMEL and other variables it was observed that liquidity, size (total assets) and management quality were the major determinant of CAR however after analyzing the pre and post financial crisis years respectively size (total assets) was seen to be a consistent determinant of CAR
16	Ogilo Fredrick (2012)	The impact of credit risk management on the financial performance of commercial banks in Kenya	The multiple regression analysis was used	2006-2010	The result showed that there is CAMEL can used to analyse the credit risk management of the commercial banks in Kenya

17	Hossain.M. Yeasin (2021)	Impact of credit risk management on financial performance of commercial banks	Panel regression analysis model methodology was adopted for this study	2010- 2019	The researcher concluded that credit risk has a negative influence on the bank's performance
18	Mubbushar (2016)	Impact of Credit Risk Management on Financial Performance of Commercial Banks of Pakistan	panel regression model was employed for this study.	2005- 2014	The result of the study showed that there is significant relationship between capital adequacy and non- performing loan which are the explanatory variables and the financial performance of the bank (ROA and ROE)

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 INTRODUCTION

Research methodology refers to the data collection, analysing, interpretation of the result and giving possible recommendation base on the empirical finding done during the research. There are two (2) type of data collection which are qualitative and quantitative.

The quantitative method uses both statistic and mathematic approach to make decision which are scientific and objective while qualitative data are unstructured data, therefore conclusion made are subjective and are based on thoughts and emotions. For this research, we are using the quantitative method design

3.1 RESEARCH DESIGN

The quantitative design requires the use of secondary data of Nigerian commercial banks by employing the CAMEL ratios. The panel data, spanning 10 years (2011-2021) which was adopted in this research can be traced to *Bureau van Dijk (11/08/2021). Bank focus.*

<https://orbis.bvdinfo.com/> data base for further research work, this information was obtained from the annual report of the selected commercial bank for this study.

3.2 RESAERCH POPULATION AND SAMPLE

Commercial banks are established with the motive of earning interest however we have some commercial banks which does not consider interest, these banks are referred to as Islamic banks. A population is combination of items with common interest or attribute, for this study the population would be the commercial banks in Nigeria excluding Islamic banks, however the commercial banks in Nigeria are categorised based on the authorisation of transaction given to by the financial regulators as seen in. Wikipedia contributors, List of banks in Nigeria, in:

https://en.wikipedia.org/w/index.php?title=List_of_banks_in_Nigeria&oldid=1036714423 on (5/8/2021) but this would not be considered.

From the population of commercial banks in Nigeria, a sample of six (6) selected banks would be considered for this study due to the data available, this would be used to evaluate the credit risk management on the financial performance of commercial banks in Nigeria. The following are the selected banks: Access Bank Plc, Fidelity Bank Plc, Ecobank Nigeria, Unity Bank Plc, Stanbic IBTC Bank Plc, and Zenith Bank Plc.

3.3 RELIABILITY AND VALIDITY OF THE RESEARCH INSTRUMENT

The secondary data was used for this research used the quantitative design to carry out the respective data analysis which would involve the use of CAMEL ratios obtained from Bank Focus data base. This data base collates specific financial information from the annual report of the banks, for future researcher other ratios can be obtained as well but the specific ratios were selected because it is relevant to accomplishment of the research objective.

3.4 DATA COLLECTION AND ANALYSIS TECHNIQUES

The data was collected from Bank Focus data CAMEL ratios. A cross-sectional ratio analysis would be done alongside the software Statistical Package for Social Student (SPSS) would be used for the descriptive and inferential analysis.

Under the descriptive analysis, summary of the data would be explained based on the mean and standard deviation while the inferential analysis includes correlation between the independent and dependent variables by determining the strength of their relationship and ultimately the regression analysis which would be used to test the hypothesis of this study.

3.5 MEASUREMENT AND DEFINITION OF VARIABLES

The follow ratios were considered and measured as follows

CAMEL: This is rating system introduced by the United State as a supervisory rating to assess the performance of the bank (CFI education Inc.,2021) which have a combination of six (6) factors but for the study we are only going to consider five (5). These ratios are not released to the public, but it is used by top management to analysis possible risk that the bank might be facing, which are defined below:

a)Capital Adequacy Ratio(CAR): After the 2008 financial crisis, the financial regulation came up with BASEL III which requires that every commercial bank must maintain a minimum capital level and leverage ratio expressed as Capital ratio to Risk weighted asset which was considered as the dependable variable for this study, the CAR was established by the regulators(Adam & Margaret., 2020) to put cushion in place in order to absorb reasonable amount of loss before the financial institution goes insolvent and this capital can divided into two. The Tier 1 capital was set up to absorb possible losses that would not disrupt the trading activities of the bank which is made up of the common equity and disclosed reserve of the bank and must be a at least 4.5% (Steven & Khadija., 2021) of the Risk Weighted Assets(RWA) that is CET1 but total Tier 1 should be a minimum of 6% to RWA while Tier 2 capital is required to absorb losses when the bank is no longer a going concern, the combination of the two(2) capital must be 10.5% including the capital conservative buffer to the RWA although the minimum ratio of CAR is 8% without a the capital conservative buffer.

The RWA (Risk Weighted Assets) includes loans that are being issued by the bank and also assigning some degree on the loan base on their credit risk exposure because of the subprime home mortgage transaction that was heavy invested in by bank in 2007-2008 which later became a credit risk to the bank as a result of the customers not meeting up with obligations, the BASE III regulators then used the RWA to determine the minimum amount of capital that should held by bank or financial institution to reduce possible risk of insolvency (Alicia & Khadija., 2020).

b) Management Ratio (MR): This ratio is used to analysis the potential capacities of the bank management, displaying their abilities of recognizing and creating wealth by properly utilising the external fund and handling financial stress. The ratio considers the business strategy of the financial performance and internal control of the institution, however internal control is more likely around quality measure while the business strategy tilt toward quantitative analysis, for this

study the management ratio is expressed as it Gross loan to total asset showing the percentage of loan outstanding with respect to the total assets owned by the bank hitherto, as this ratio increases it exposes the bank to possible high default risk leading to possible liquidity problem for the bank (U.S. Business Reporter., 2021).

c) Asset Quality Ratio (AQR): this is very important ratio of CAMEL, it measures (Julia & Khadija., 2020) the qualities of the loans issued by the bank. This shows the earnings of the bank, which gives an insight on the investment policies and practices of the bank, by rating the possible investment risk the institute may face while other factors remain constant against the capital earning of the institute. For this study the AQR is expressed as total earning asset to total asset furthermore, the quality of a loan is based on the credit worthiness of the borrowers and the sufficient adjustment to loan loss (U.S. Business Reporter 2021). If this ratio is high then the credit risk needs to be investigated that is, interest rate risk and liquidity risk, also the possibility of asset losing its value due to increase in this risk leading to lower rating of the bank's asset (CFI Education Inc., 2021).

d) Earnings ratio (ER): the earnings ratio is used to measure the profitability of the bank. To determine the performance of this ratio the following are considered: what is the position of this ratio compared to its competitors, the trend of performance over the years, and what are its triggers to its upwards or downward performance. The net interest income is the difference between the interest return derived (from loan, mortgage and securities) and the interest cost incurred on (deposit, savings account, certificate of deposit) (Bankrate, LLC., 2021) this is the primary source of income for the bank while other income comes from non-interest income which form the highest fraction of revenue to the bank (ATM charges, overdraft fee, services charges etc) (Federal Reserve bank of Cleveland., 2021). For this study we are using ROA (Return on Asset) to determine the performance of this variable which is expressed as Net Income after tax to Total asset, the higher the proportion of this variable the better although the trend of performance matters a lot to top management and investors (existing and potential).

e) Liquidity ratio (LR): A commercial of liquidity can be examined based on the purpose usage. For long term stability the Net Stable Fund Ratio (NSFR) is considered while Liquid Coverage Ratio (LCR) is the alternate measure of performance to meet up with immediate cashflow problem and according to BASEL III accord both ratios must be 100%. (IFT world., 2021)

The liquidity position of a bank is another very important aspect of the CAMEL ratio, insufficient liquid asset of the bank could lead to possible bank runs and if not properly handle it could lead to insolvency of the bank. For this study, the liquidity ratio is expressed as Net loan to Deposit and short-term fund to test the performance of how commercial banks can meet up with their short-term obligation without affecting the daily operation of the bank. As earlier said, a higher liquidity is good for the bank but if this ratio become too high that is 100% then there would be possibility of the bank not to be able to meet up unforeseen economic crisis although the short-term loan would be giving out to creditors at higher rate to optimise the profitability of the bank

3.6 MODEL SPECIFICATION

This model was previously adopted by Osama A. El-Ansary, Hassan M. Hafez (2015).

“Determinants of capital adequacy”: An empirical study on Egyptian banks. In their study capital adequacy ratio was the dependent variable while Asset Management quality, Management quality ratio, liquidity, Profitability, Credit risk, Size(Total Asset) and Net Interest Income Growth were the independent variables. The selected variables would use the same ratio as applied in this study.

For this research the model would be modified as thus:

The variables are ratios (CAMEL) from the annual report using the SSPS (Statistical Package for Social Student) to carry out the descriptive analysis also error term would be introduced for unexplainable changes.

The CAMEL ratio stands for:

C-Capital Adequacy Ratio

A-Asset Quality Ratio

M-Management Ratio

E-Earnings Ratio

L-Liquidity Ratio

The Capital Adequacy Ratio would be the dependent variable while others would be the independent variables

<u>Variables</u>	<u>Ratios</u>
Capital Adequacy Ratio (CAR)	$\frac{\text{Capital Ratio: Tier 1 + Tier 2}}{\text{Risk Weighted Asset}} * 100$
Asset Quality Ratio (AQR)	$\frac{\text{Total Earning Assets}}{\text{Total Assets}} * 100$
Earnings Ratio (ER)	$\frac{\text{ROA Ratio: Profit After Tax}}{\text{Total Assets}} * 100$
Liquidity Ratio (LR)	$\frac{\text{Net loan}}{\text{Deposits and short-term fund}} * 100$
Management Ratio (MR)	$\frac{\text{Gross Loan}}{\text{Total Assets}} * 100$

3.6.1 MODEL ANALYSIS AND EQUATION:

$$\text{CAR} = \text{AQR} + \text{MR} + \text{ER} + \text{LR} + e \dots \dots \dots i$$

$$\text{CAR} = B_0 + B_1 \text{AQR} + B_2 \text{MR} + B_3 \text{ER} + B_4 \text{LR} \dots \dots \dots ii$$

Restating equation(ii)

$$Y = a + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + e \dots\dots\dots \text{iii}$$

a= constant

b1.....b6= co-efficient of each variable.

e= error term

CHAPTER FOUR

DATA ANALYSIS

4.0 INTRODUCTION

This research employed a panel data of 10years (2011-2020) where some selected ratios have been considered and would be analyzed using the descriptive, regression and correlation to interpret the relationship between the independent and dependent variables.

The SPSS 25 (Statistical Package for Social Science) would be applied to evaluate the CAMEL ratios, from the output derived after using the package this would be interpreted to satisfy the hypothesis test for this study.

4.1 ANALYSIS AND INTERPRETATION OF THE DATA

4.1.1 Table 1: LIST OF SELECTED COMMERCIAL BANKS FOR THIS STUDY

SELECTED COMMERCIAL BANK	PERIOD
Access Bank Plc	2011-2020
Fidelity Bank Plc	2011-2020
Ecobank Nigeria	2011-2020
Unity Bank Plc	2011-2020
Stanbic IBTC Bank Plc	2011-2020
Zenith Bank Plc	2011-2020

Source: *Bureau van Dijk (2021)*

4.1.2 Table 2: DESCRIPTIVE ANALYSIS

Variables	N	Mean	Standard Deviation
CAR	60	4.92683	52.36776
AQR	60	77.48982	4.43599
ER	60	1.39590	2.143428
LR	60	59.62880	17.89452
MR	60	44.06427	11.17660

Source: *Computation from SPSS 25*

Under the BASEL III requirement the minimum standard for every commercial bank is 8% this is the combination of Tier 1 and Tier 2 capital but with the inclusion of capital buffer requirement the minimum standard is 10.5%(Steven & Khadija 2021), from the descriptive table we can observe CAR of the selected commercial bank is far below the average standard showing a result 4.9% and a standard deviation of 52.4% this indicate that the average performance of the commercial banks might not be able to absorb sudden default loans or bank runs, possible reason for this could be as a result of the bank relying largely on a more expensive wholesale funding(Bennet, Coleman & co. Ltd., 2021) which had a ripple effect on the earnings ratio as seen in Table 2 1.4% average performance and a standard deviation of 2.14%. This indicates that *H1: credit risk management and its importance have significant impact on the financial performance of commercial banks.*

The higher the asset quality ratio of a commercial bank the better the financial performance of the institution. For this ratio Table 2 showed a mean of 77.4% and a standard deviation of 4.44%, this indicates that the bank is properly utilizing the assets of the bank efficiently leading to creation of passive income for the financial institution (Joshua & Doretha., 2021) while the liquidity ratio showed a mean of 56.6% and 17.9% which imply that the selected financial institution has maintain moderate liquidity level over the past decades. The management quality ratio, this measure the gross loan to total asset furthermore, the higher this ratio the higher the probability of default on the banks to meet up with its obligation leading to lower liquidity position for the institution however, Table 2, showed a mean of 44.1% and standard deviation 11.2% which indicated that the banks are acting sound from this position.

4.1.3 Table 3: CORRELATION ANALYSIS

		CAR	AQR	ER	LR	MR
CAR	Pearson Correlation	1	-.038	.634**	.529**	.307**
	Sig. (1-tailed)		.387	.000	.000	.008
	N	60	60	60	60	60
AQR	Pearson Correlation	-.038	1	.196	.080	.140
	Sig. (1-tailed)	.387		.066	.272	.143
	N	60	60	60	60	60
ER	Pearson Correlation	.634**	.196	1	.321**	.144
	Sig. (1-tailed)	.000	.066		.006	.135
	N	60	60	60	60	60
LR	Pearson Correlation	.529**	.080	.321**	1	.859**
	Sig. (1-tailed)	.000	.272	.006		.000
	N	60	60	60	60	60
MR	Pearson Correlation	.307**	.140	.144	.859**	1
	Sig. (1-tailed)	.008	.143	.135	.000	
	N	60	60	60	60	60

**Correlation is significant at the 0.01 level(1-tailed)

Source: *Bureau van Dijk (2021)*

The correlation table gives information on the positive and negative relationship between the dependent and explanatory variable as well as the strength and weakness of their relationship. With a sample size of 60, the earnings ratio, liquidity ratio and management ratio show a positive relationship to CAR-1% which indicate that an increase in the ER, LR would improve the position of the CAR but a decrease in MR is expected for the bank to be able to meet its obligation however, the AQR showed a negative result indicating that this variable has an inverse relationship to CAR.

Furthermore, among the explanatory ratio the variable with far above average strength of relationship with the CAR is the ER, if there is drastic increase in this variable it would really have a positive high impact on the dependent variable and when a decrease occurs as well followed by LR, MR and lastly AQR respectively.

To conclude, the correlation output on Table 3 reveal that the explanatory variable can be considered independently for credit risk management because majority of the variables were positive and exhibits a strong relationship with the dependent variables.

This revealed that *H1: Ratios has significant impact on prediction of the financial performance of commercial banks.*

4.1.4 Table 4: MODEL SUMMARY ANALYSIS

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.752 ^a	.566	.535	35.72509	.820

a. Predictors:(Constant), MR, AQR, ER, LR

b. Dependent Variables: CAR

This model summary gives information on the aggregate influence the explanatory variables have on the independent variable. With high result of R at 75% and an adjusted R result of 57% this describes that there is a strong relationship between the dependent variable-CAR and the explanatory when considered in aggregate.

From Table 4 we can deduce that the CAMEL ratio should be used in aggregate to determine the credit risk management of the commercial bank. *H1: credit risk management has significant influence on the financial performance of commercial banks*

4.1.5 Table 5: ANOVA TABLE

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	91605.050	4	22901.263	17.944	.000 ^b
	Residual	70195.518	55	1276.282		
	Total	161800.569	59			

a. Dependent Variable: CAR

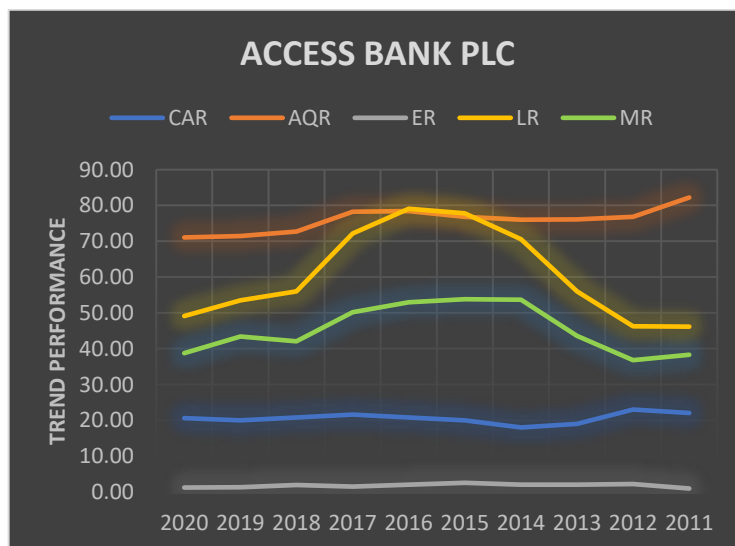
b. Predictors:(Constant), MR, AQR, ER, LR

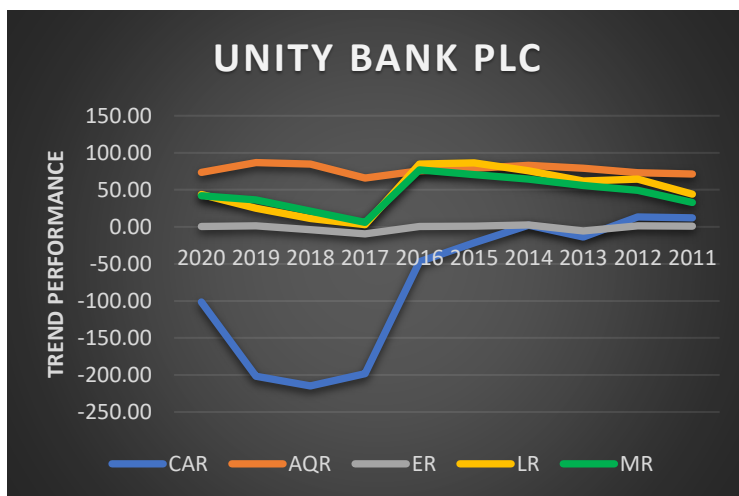
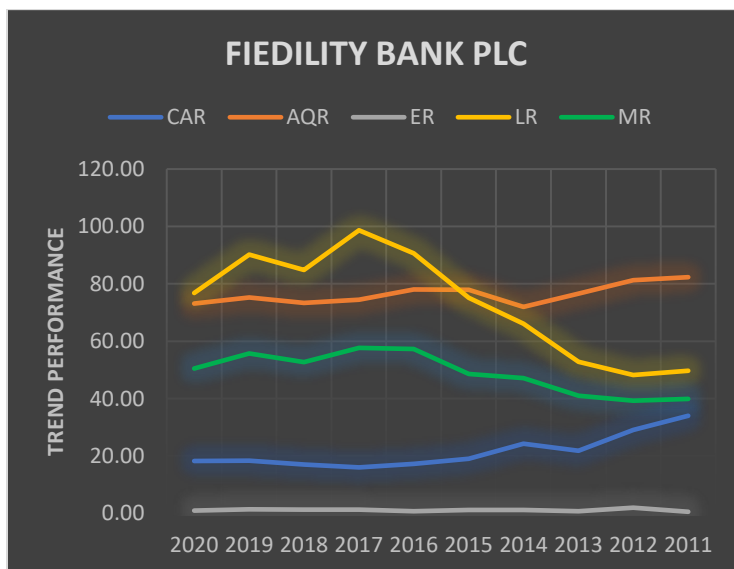
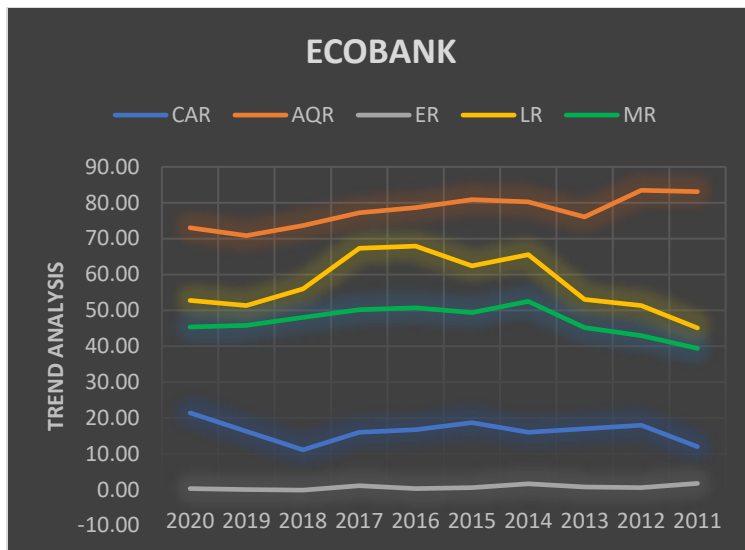
The ANOVA table is used to test whether a model would be accepted or not. The Table 5 shows a regression of 91,605 revealing the count of variation accounted for during this research while the residual account for variation which were not accounted showed a count of 70,195 which is less than the regression count, this indicates that the CAR result is explained by the explanatory variables. Hence, *H1: proper evaluation and interpretation of CAMEL ratios has significant impact on the financial performance of the Nigerian commercial bank.*

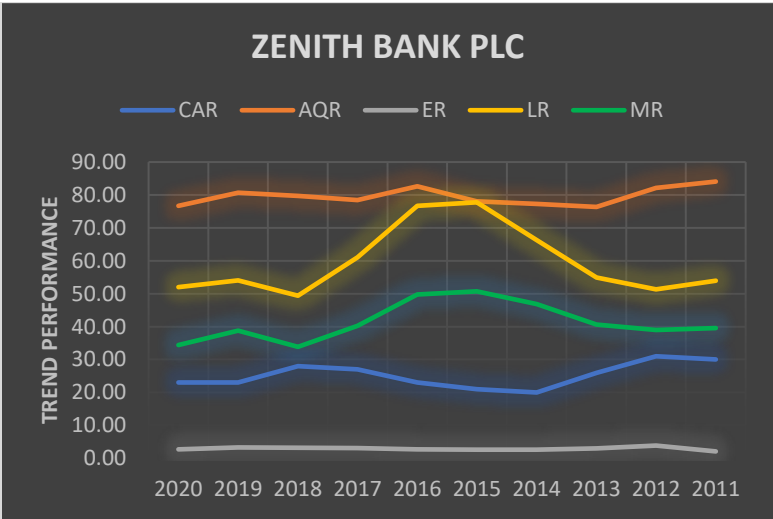
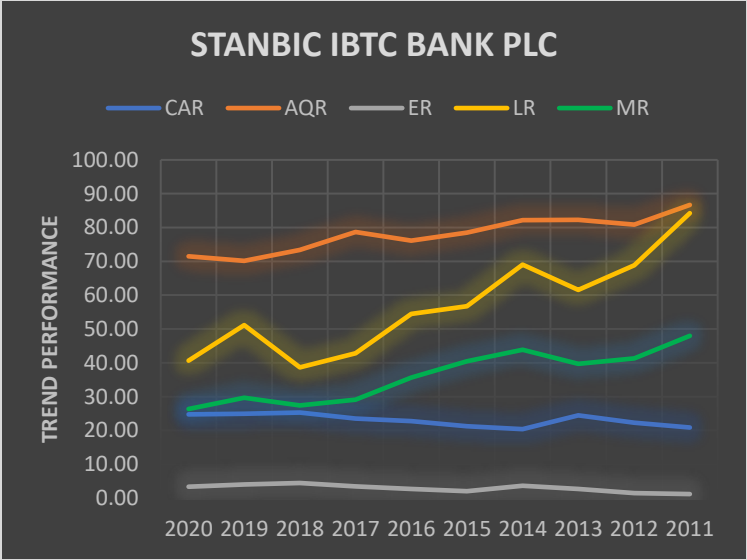
Ultimately, with data analysis result we have been able to test the hypothesis of this study including a significant level of less than 1% as shown in Table 5, we can reject the null hypothesis and build our conclusion to say that there is significant relationship between the explanatory variables and CAR when considered independently and in aggregate.

4.2 Table 6: GRAPHICAL REPRESENTATION OF THE CAMEL RATIOS RELATIONSHIP OF THE SELECTED BANKS

From the population of the commercial banks in Nigeria, a sample of six (6) commercial banks were considered for this study spanning from (2011-2020) for 10 years. We would go further to look at the graphical relationship between the dependent and independent variable as this would show the trend and pattern of the CAMEL of the last decade in the respective commercial bank in Nigeria.







CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 SUMMARY OF THE STUDY

The aim of this study is to evaluate the impact of credit risk management on financial performance of commercial banks in Nigeria using the CAMEL ratios to determine this, 10 years (2011-2020) financial performance of selected commercial banks in Nigeria were considered. The Capital Adequacy Ratio was the dependent variable while Management Ratio, Asset Quality ratio, Liquidity Ratio and Earnings Ratio were the independent variables.

While carrying out this research, the methodology used was a cross-sectional ratio analysis with respect to the respective bank's ratio performance for the selected period, while descriptive analysis was used to display the average performance furthermore, correlation analysis (Pearson correlation) was introduced to show the correlation between the independent and explanatory variables and ultimate the ANOVA where we deduced that dependent variable is explained by the explanatory variables. All these respective data analyses were employed to test the hypothesis of this study.

5.2 FINDINGS

- The liquidity ratio (LR) is measured as Net loan to deposit and Short term fund showing an average performance of the commercial of a decade as 59.62% which indicates that the banks are performing well viewing from liquidity position because this indicates that the retail banks are either retaining their customers or getting more customers adding to their deposit base and also there is a possibility of obtaining a cheaper short term funding which possibly lead to increase in this ratio as a result of this there would be increase in loan issuance leading to further creation of wealth for the bank. But for commercial bank, when liquidity position is 100% this simply means all the banks deposit and short-term fund are being issued out as loan which could lead to possible fire sale or bank runs to meet up with immediate crisis because of information asymmetric or economic crisis. Also, this ratio showed 0.52 positive and fair correlation with the CAR of the commercial bank, portraying that it can independently be used to measure the performance of CAR of a commercial bank.
- The management ratio which is one of the CAMEL ratios is expressed as gross loan to total asset. This loan referred to the loan owed by the bank in relation to total assets of the commercial however, the higher this ratio the more this become a threat to the liquidity of the financial institution, the average performance of the selected bank over a 10 years showed a result of 44.06 on Table 2 which is a good effect because it indicted that the outstanding loan owed by the bank is less than average 50% of the total assets of the bank that is the probability of default of the bank is low too. Also, the correlation result on Table 3 shows a positive outcome to the independent variable but it was low at 0.307 which indicates that an increase in this variable would lead to an increase in the independent variable.

- The asset quality ratio was expressed as total earning assets to total assets. The mean outcome on Table 2 showed 77.48%, this indicate that a high percentage of the total asset is invested on assets that are yielding income also high diversification of assets but indicates a low and negatively relationship to the CAR on Table 3 however, the higher this ratio the better the bank's performance depending on the creditworthiness of the individual and the market value of the loan because if this loan becomes impaired it would lead to reduction in the credit rating of the asset of the bank due to interest rate risk and liquidity risk which are credit risk. As shown on Table 3 an inverse relationship low relationship with the CAR indicates that if the borrowers rate of default is high then the CAR will fall as well if all other factors remain constant.
- Earnings ratio, this seemed to be the ratio that has the strongest among all the explanatory correlation with the dependent variable and it is also shown on Table 3 as 0.63 therefore positive percentage change in this ratio would create a drastic increase in the CAR-1% demanding on the magnitude of the earning earned in the future however the average performance of this ratio is 1.39% compared to the cost incurred. This indicate that the average performance of the selected commercial earning is low over the last 10 years compare to other variables considered for this study, and it is expressed as net income after tax to total asset in addition, a higher ratio contributes to the good quality of bank although, according to the global economy.com(.2021) Nigerian average commercial bank's performance on ROA from (1996-2017) was 1.77% also according to St Louis Federal Reserve, the ROA has always been revolving around 1%(Marshall & Margaret., 2021)
- Furthermore, the CAR performance is explained by independent variable at 99% as shown on Table 5

5.3 CONCLUSION

From the result above, we can conclude that the explanatory variable(s) can be used in aggregate evaluate the impact of credit risk management on the financial performance of the commercial bank using CAR-1%. Furthermore, the individual independent variables can be used evaluate the impact of credit risk management in isolation this means that the respective selected ratios are significant in determine the financial performance of the commercial bank however proper interpretation of this these selected ratios would aid this evaluation effectively.

5.4 RECOMMENDATION

From this study, I would recommend that the bank management should engage in activities that would improve on their net income after tax by not investing on expensive funding which could probably be increasing their cost of finance by reducing the net income of the bank also the contract of agreement of the fund received from the creditor should be reviewed to renegotiate the cost incurred by the bank, lastly since the bank render other services the bottom line cost should be reviewed by carrying out a cost and benefit analysis

5.5 CONTRIBUTION TO FURTHER RESEARCHERS

This research would contribute to the existing review done in relation to this work by elaborating and including recent reviews and information for future researchers with respect to this study.

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APPENDIX

ID	BANK NAMES	CAR	AQR	ER	LR	MR
1	ACCESS BANK	20.61	71.07	1.22	49.16	38.79
2	ACCESS BANK	20.02	71.48	1.32	53.50	43.44
3	ACCESS BANK	20.78	72.72	1.92	56.01	42.02
4	ACCESS BANK	21.61	78.29	1.46	72.16	50.21
5	ACCESS BANK	20.77	78.48	2.05	79.08	52.96
6	ACCESS BANK	20.00	76.85	2.54	77.77	53.81
7	ACCESS BANK	18.00	76.00	2.04	70.57	53.67
8	ACCESS BANK	19.00	76.12	1.98	56.01	43.62
9	ACCESS BANK	23.00	76.79	2.20	46.23	36.79
10	ACCESS BANK	22.00	82.22	0.94	46.15	38.34
11	ECOBANK	21.44	72.99	0.37	52.77	45.42
12	ECOBANK	16.31	70.85	0.06	51.34	45.86
13	ECOBANK	11.13	73.63	-0.09	56.00	48.06
14	ECOBANK	16.00	77.24	1.10	67.34	50.17
15	ECOBANK	16.72	78.63	0.32	67.92	50.76
16	ECOBANK	18.72	80.88	0.63	62.39	49.36
17	ECOBANK	16.00	80.21	1.68	65.53	52.51
18	ECOBANK	17.00	76.03	0.80	53.03	45.23
19	ECOBANK	18.00	83.48	0.59	51.36	42.95
20	ECOBANK	12.00	83.09	1.78	45.10	39.42
21	FIEDILITY	18.18	73.08	0.97	76.85	50.53
22	FIEDILITY	18.29	75.23	1.34	90.24	55.74
23	FIEDILITY	17.00	73.37	1.33	84.78	52.71
24	FIEDILITY	16.00	74.48	1.29	98.67	57.66
25	FIEDILITY	17.22	77.99	0.75	90.60	57.24
26	FIEDILITY	19.00	77.90	1.13	75.13	48.63
27	FIEDILITY	24.21	71.96	1.16	66.06	47.10
28	FIEDILITY	21.77	76.58	0.71	52.84	40.94
29	FIEDILITY	29.00	81.30	1.96	48.20	39.25
30	FIEDILITY	34.00	82.32	0.53	49.69	39.88
31	UNITY	-101.47	73.65	0.42	43.62	41.91
32	UNITY	-201.59	86.75	1.15	25.01	36.48
33	UNITY	-214.80	84.67	-3.65	11.08	21.27
34	UNITY	-198.10	65.87	-9.53	2.91	6.05
35	UNITY	-46.98	75.51	0.44	84.66	76.88
36	UNITY	-21.46	79.02	1.06	86.36	70.35
37	UNITY	2.02	82.83	2.59	75.61	64.39
38	UNITY	-13.81	78.95	-5.59	61.72	55.90
39	UNITY	13.35	73.09	1.56	64.34	49.22

40	UNITY	12.01	71.35	0.72	44.17	32.89
41	STANBIC IBTC	24.80	71.51	3.35	40.66	26.36
42	STANBIC IBTC	24.90	70.16	4.00	51.11	29.65
43	STANBIC IBTC	25.30	73.40	4.47	38.66	27.45
44	STANBIC IBTC	23.50	78.67	3.49	42.87	29.13
45	STANBIC IBTC	22.80	76.12	2.71	54.49	35.62
46	STANBIC IBTC	21.30	78.47	2.01	56.77	40.47
47	STANBIC IBTC	20.40	82.18	3.66	69.02	43.89
48	STANBIC IBTC	24.50	82.30	2.72	61.52	39.75
49	STANBIC IBTC	22.31	80.88	1.50	68.81	41.29
50	STANBIC IBTC	20.85	86.69	1.20	84.25	47.99
51	ZENITH	23.00	76.73	2.72	52.04	34.42
52	ZENITH	23.00	80.66	3.29	54.09	38.80
53	ZENITH	28.00	79.67	3.25	49.40	33.86
54	ZENITH	27.00	78.44	3.11	61.05	40.25
55	ZENITH	23.00	82.64	2.74	76.73	49.81
56	ZENITH	21.00	78.03	2.64	77.77	50.72
57	ZENITH	20.00	77.25	2.65	66.28	46.82
58	ZENITH	26.00	76.37	3.03	54.96	40.60
59	ZENITH	31.00	82.19	3.87	51.31	38.95
60	ZENITH	30.00	84.08	2.09	53.99	39.57