UNIVERSITY OF CAPE COAST

# CREDIT RISK AND PERFORMANCE OF SELECTED COMMERCIAL BANKS IN GHANA

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# CREDIT RISK MANAGEMENT AND PERFORMANCE OF SELECTED COMMERCIAL BANKS IN GHANA

BY

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## ABSTRACT

The study sought to determine the effect of credit risk management on financial performance of commercial banks listed on the Ghana Stock Exchange. It employed the quantitative research approach and explanatory design of which the targeted all commercial banks listed on the Ghana Stock Exchange (GSE) for the period 2014 – 2018. However, only 10 commercial banks with accurate information about their financial statements from 2014 to 2018 were considered in this study. The study employed the panel data analysis structured on the Ordinary Least Squares (OLS) regression method to examine the relationship between credit risk management and banks' performance. This was done with the aid of multiple regression technique of the Statistics and Data software (STATA version 14.0). Leverage Ratio (TDA) has negative relationship with the financial performance (ROA) of selected listed commercial banks in Ghana. Furthermore, Non-Performance Loan Ratio (NPLR) has negative relationship with the financial performance (ROA) of commercial banks. Therefore, the study recommended that the Bank of Ghana should encourage Commercial banks to reduce their lending rates prudently and other fees and commission charge or even try to waive some charges on banking services. Also, Commercial banks should boast the confidence of their customers to deposit more by keeping adequate liquidity, capital levels and quality assets on their books. Due to the negative relationship between Non-Performing Loans Ratio (NPLR) on performance, commercial banks should be critical in given out loans and how they are retrieved on time.

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**DEDICATION**

To my family

# TABLE OF CONTENTS

## LIST OF TABLE

## ABBREVIATION

| | | |
|---|---|---|
| BoG | - | Bank of Ghana |
| TDA | - | Leverage |
| CBG | - | Central Bank of Ghana |
| CRM | - | Credit Risk Management |
| GSE | - | Ghana Stock Exchange |
| IRB | - | Internal Rating Basel |
| KYC | - | Knowing Your Customer |
| NPLR | - | Non-Performing Loan Ratio |
| ROA | - | Return on Asset |
| ROE | - | Return on Equity |

# CHAPTER ONE

# INTRODUCTION

Since the banking crisis started around 2014 and reoccur in 2018, the Central Bank of Ghana (CBG) has had to revoke the licenses of many distressed bank, consolidated some banks too and recently some banks have to be bailout. This calls for efficient management of risk involving loan and other advances to prevent reoccurrences. The study, therefore, sought to determine the effect of credit risk on financial performance of some selected commercial banks listed on the Ghana Stock Exchange. The study employed the quantitative research approach and explanatory design in which only 10 commercial banks were selected from the listed banks on Ghana Stock Exchange (GSE) for the period 2014 – 2018. The study employed the panel data analysis structured on the Ordinary Least Squares (OLS) regression method to examine the relationship between credit risk and banks' performance.

## Background to the Study

The banking sector performs a crucial function in the financial intermediation procedure of all economies rendering its efficacy and efficiency a vital prerequisite in safeguarding solidity and growth (Halling & Hyden, 2006).Valuable economic activities are engaged by banks in an attempt to ensure their survival and profitability (Diamond & Rajan, 2002). Smooth flow of funds is safeguarded at the asset side of the balance sheet of banks by loaning to deficit spending units whereas delivering liquidity to savers on the liability side. However, expediting trade via the delivery of payment and settlement systems, safeguarding the prolific investment of

wealth and the profitability of other diverse purposes according to Jenkinson (2008) make banks vulnerable to a large number of risks including human resource risk, interest rate risk, foreign exchange risk, market risk, credit risk, regulatory risk, and liquidity risk.

Risk involves the day-to-day uncertainties of attracting, lending and investing money. Crouhy (2001) indicated that as a basic element risk could influence financial behaviour. Without risk, the financial system necessary for efficient allocations of resources would be vastly simplified. According to Heffernan (2005) 'risk is understood to be the volatility or standard deviation of net cash flows of the firm, or, if the company is very large, a unit within it. Rose (2002) and Kealhofer (2003) also confirmed that risk is part of banking, and can hardly be avoided, because it is not possible to predict the future repayment capacity of debtors with precision. Crouhy (2001) added that no one has ever been successful in forecasting the stock market, interest rates, or exchange rates consistently.

Duffie and Singleton (2003) elaborated risk management as the process of adjusting both the risk of large losses and the firm's vulnerability to them. This vulnerability depends on the portfolio of positions and on the amount of capital that is backing the firm's investment activities. Vulnerability to risk also depends on the quality of the institution's risk-management team, its risk-measurement systems, the liquidity of its position, and many other attributes (Hunseler, 2013). According to Bente (2009) reducing costs to minimum is not the only target of when dealing with daily operations in banks. In order to diminish the negative impact of risk facts, managing risks in banking has become a fundamental element of banking management. The

perception of the bank to the general public is clearly affected by the way banks deal with risks. Generally speaking, a strong and safe bank is preferred by shareholders as well as by normal customers because the soundness of the bank attracts more deposits (Casu, Girardone & Molyneux, 2006).

Lending constitutes one of the core activities of all Ghanaian banks and their counterparts elsewhere around the world. The evidence can be seen in the high loans-to-assets ratio of these banks and the substantial annual growth of demand of credit by public and private players in the economy. Lending, as a result constitutes a major source of revenue for most banks. For most banks, the loan portfolio usually serves as the main revenue source and asset holdings. Loans have therefore been seen as the largest asset holdings of banks since it sustains the banks fiscal health and income generation. It can be inferred that a loan portfolio is a profitable asset for banks in the perspective of their positive effect on their returns. But loan facilities can have negative consequences on banks especially if they don't perform as expected (Bhattarai, 2014).

Credit risk is one the most key type of risks encountered by financial institutions as a result of lending. As a class of risks in the financial industry, credit risk can cause insolvency and lead to a company's bankruptcy or failure and affect the financial performance of these firms. Credit Risk Management has therefore assumed prominence and become a strategic focus area among Ghanaian financial institutions (Ghana Business & Finance, 2012). Gestel and Baesens (2009) opine credit risk to be a loss incurred when a party fails to meet its part of a contractual financial agreement at the expected date. Besides loans, other financial instruments like trade financing, acceptances, foreign

exchange, interbank deals, bonds, swaps, financial futures, equities options; all contribute to put banks at higher credit risks. When a bank offers loans to its client, it needs to make a provision in its books against default of these loans. When the provision made grows higher than the total loans granted, there is much risk faced by the bank. It follows that an increase in the size of loan losses relative to total credit sends the signal that the core trading assets of the bank are to heading non-performing status, which could eventually affect bank profitability.

Bank's profitability is of vital importance for investors, stakeholders and the economy at large. Investors are interested in the returns for their investment. Banks' performance is the ability of a bank to achieve its objectives using its available resources. Bank's performance appraisal is an evaluation which is done periodically and systematically in determining the achievements of the company's objectives (Amelia, 2012).

To attain greater profitability feat, financial institutions especially banks are therefore obliged to put up efficient and effective risk management mechanism to eliminate or reduce risk employing varying managerial resources and so risk management has moved to center stage in defining superior performance of financial institutions (Haneef, Riaz, Ramzan, Rana, Hafiz & Karim, 2012).

Credit arrangement is the key income bringing forth action for the money related area (Nawaz, Munir, Siddiqui, Tahseen-ul-Ahad, Asif, & Ateeq, 2012). Be that as it may, this activity incorporates more serious dangers to both the borrower and the loan specialist. The dangers connected with exchanging partners not meeting their obligation according to the concession

to obliged period or at whatever time a while later may essentially jeopardize the smooth running of business of the budgetary foundation (Nawaz et al., 2012). Alternatively, money related organizations have high liquidation hazard on the off chance that they have high credit danger, and this places the savers in threat.

Throughout the years, banks have stood up to challenges for various components including careless advance qualities for indebted individuals and counterparties, lacking gathering peril supervision, or deficient commitment to modifications in money related circumstances of the nation may result to declining in the advance necessities of a bank's counterparty (Gil Diaz, 1994). It is in this manner clear that budgetary establishments utilize more noteworthy energy to make agreeable net income through credit hazard administration.

Ghana credit market is highly competitive, because of that many financial institution have designed ways to enable them compete with the credit market. Most of them especially the banks who used to lend to enterprises that are able to offer immovable assets as collateral are now lending to individuals, corporate bodies and enterprises without any form of collateral. As a result of this, most banks ended up with high default rate and yet even with collateral; some banks are unwilling to provide lending due to the risk that collateral may have been used in multiple borrowing (Afriyie & Akotey, 2012).

In 2006, the commonest practice of most financial institutions was the door to door banking; people were asked to open accounts and come for loans. Other banks like Stanchart, Barclays Bank and later Fidelity Bank gave loans

to government workers who were not their respective customers. It was just by Knowing Your Customer (KYC), collecting their pay- in slips and amortizing the principal and interest to be deducted from their salaries by the Controller and Accountant General Department. Even though these strategies went a long way to help the banks in generating money, but also contributed to high default rate in Ghana's credit market.

A high level of financial leverage is usually associated with high risk. This can easily be seen in a situation where adverse rumours, whether founded or precipitated financial panic and by extension a run on a bank. According to Umoh (2002) and Ferguson (2003) few banks are able to withstand a persistent run, even in the presence of a good lender of last resort. As depositors take out their funds, the bank haemorrhages and in the absence of liquidity support, the bank is forced eventually to close its doors. Thus, the risks faced by banks are endogenous, associated with the nature of banking business itself, whilst others are exogenous to the banking system.

Credit risk is by far the most significant risk faced by banks and the success of their business depends on accurate measurement and efficient management of this risk to a greater extent than any other risk (Giesecke, 2004). Against this background, this study examines the relationship between credit risk and performance of selected commercial banks in Ghana.

**Problem Statement**

The years 2017 and 2018 went down memory lane as the period in which the central bank of Ghana stepped up its game to reform and address some ailing issues in Ghana`s financial sector. The actions of the Bank of Ghana were aimed at sanitising the industry. Some of the earlier regulatory

activities were the Introduction on IFRS 9 provisions – Guidelines for Financial Publications for Banks issued on 30th June 2017, increased minimum capital to GHS 400m – Notice on New Minimum Paid Up Capital issued on 11th September 2017 (Odame, 2019).

In 2018, some of the major reforms included guidelines for financial holding companies under the Financial Holding Companies Directive issued in July 2018. There was also a guideline for mergers or acquisition of banks contained in Mergers and Acquisition Directive issued in July 2018. Guidelines for Anti-Money Laundering contained Guidelines for Anti-Money Laundering/Combating the Financing of Terrorism issued in July 2018, Guidelines in determining whether a person is fit to be director, shareholder or key management – "Fit and Proper" Directive issued in July 2018, Guidelines for term limit on CEOs and Board Members as contained in the Corporate Governance Directive (Transitional Provisions) issued in July 2018 and revised in September 2018, Guidelines for voluntary winding up – Directive for Voluntary Winding Up issued in September 2018, Guidelines for cyber-security contained in the Cyber and Information Security Directive issued in October 2018, Guidelines on corporate governance under the Corporate Governance Directive issued in December 2018 (Odame, 2019)

Following the recapitalisation exercise that ended at the close of business on 31st December 2018, there are now twenty-three (23) universal banks operating in Ghana, down from thirty-four (34) banks that operated earlier. More importantly, as part of the recapitalization exercise, Bank of Ghana approved three (3) bank mergers; for First National Bank and GHL Bank, Energy Bank and First Atlantic Bank and Sahel-Sahara Bank and

Omnibank. GCB Bank through a Purchase and Assumption Agreement acquired selected assets and liabilities from two banks (UT Bank and Capital Bank) which had their licenses revoked in 2017.

Also, the Consolidated Bank Ghana Limited was formed in 2018 and through a Purchase and Assumption Agreement acquired selected assets and liabilities from seven banks that had their licenses revoked in 2018 and 2019. These banks were Beige Bank, Construction Bank, Heritage Bank, Premium Bank, Sovereign Bank, The Royal Bank and Unibank. The big question is, after most of these banks met the Ghs400m regulatory requirement, what next? Are they now bigger and stronger than before? Has it shaped their CAR? NPLR? Among others (Odame, 2019).

Even though one of the major causes of serious banking problems continues to be ineffective credit risk management, the provision of credit remains the primary business of every bank in the World. For this reason, credit quality is considered a primary indicator of financial soundness and health of banks. Interests that are charged on loans and advances form sizeable part of banks' assets. Default of loans and advances poses serious setbacks not only for borrowers and lenders but also to the entire economy of a country. Studies of banking crises all over the world have shown that poor loans (asset quality) are the key factor of bank failures. Umoh (1994) pointed out that increasing level of non-performing loan rates in banks' books, poor loan processing, undue interference in the loan granting process, inadequate or absences of loan collaterals among other things, are linked with poor and ineffective credit risk management that negatively impact on banks profitability.

Since the banking crisis started around 2014 and reoccur in 2018, the Central Bank of Ghana (CBG) has had to revoke the licenses of many distressed bank, have consolidated some banks too and recently some banks have to be bailout. This calls for efficient management of risk involving loan and other advances to prevent reoccurrences. It is at the backdrop of this that the study seeks to examine the effects of credit risk on the financial performance of commercial banks in Ghana.

**Purpose of the Study**

The purpose of the study is to determine the effect of credit risk on financial performance of commercial banks listed on the Ghana Stock Exchange. Specifically, the study seeks to;

1. Assess the effect of the Capital Adequacy Ratio on performance of Commercial Banks in Ghana
2. determine the effect of Non-Performing Loans Ratio on performance of Commercial Banks in Ghana

**Research Questions**

1. What is the effect of the Capital Adequacy Ratio on performance of commercial banks in Ghana?
2. What is the effect Non-Performing Loans Ratio on performance of commercial banks in Ghana?

**Significance of the Study**

The findings of the study will make a contribution to the emerging body of knowledge dedicated to bringing to the fore all the pertinent issues related to commercial bank credit management. From a practical perspective, the result of the current study could be of immense help to policy makers,

bank managers, board members, financial investors, commercial banks credit officers and the various regulators like the Central bank of Ghana. The bank managers, board members could rely on the findings of the study to put in place appropriate measures to reduce the credit risk of commercial banks and hence ensure greater performance. Policy makers can also put in place appropriate measures or framework to safeguard the performance and survival of the banking sector. Additionally, the findings will add up to the pool of resources for future research in credit risk management.

**Delimitation of the Study**

This study investigated credit risk management practices of 10 licensed commercial banks which were listed on the Ghana Stock Exchange in Ghana for seven years from 2014 to 2018.The variables of the study were the capital adequacy ratio, growth, non-performing loans ratio, liquidity ratio, bank size and performance. The study will be conducted by using secondary data from published annual reports from banks, GSE and from returns submitted to Central bank of Ghana. This study will employ longitudinal quantitative design to determine the relationship between the variables of the study.

**Organisation of the Study**

The study is made up of five chapters. The first chapter, introduction, is devoted to the background to the study, problem statement, objective of the study, research questions, significance of the study, scope of the study and the organization of the study. Chapter Two deals with literature review on concepts, theories and empirical evidences relevant to the study. Chapter Three elaborates on the methodology adopted to conduct the research. In detail, the chapter deals with issues such as the research design, sampling

procedure and size, instrument and data collection tools, data analysis and ethical issues. Chapter Four presents the data, analysis and the discussions of the results. The final chapter summarises the findings of the study, make conclusion and recommendations.

# CHAPTER TWO

# LITERATURE REVIEW

## Introduction

This section presents reviews on relevance literature concerning credit risk management and financial performance of commercial banks. Theoretical framework that underpinned the study included the credit theory of money and Finance distress theory. Moreover, some concepts such as risk, risk management, types of credit risk among others. Lastly, empirical review as well as the relationship between credit risk management and financial performance of banks were discussed concurrently.

## Theoretical Review

The basis of this research is focused on credit theory of money and financial distress theory which are very relevant to this research work.

## The Credit Theory of Money

The study is hinged on two major concepts, namely credit and risk. The theories adopted for the study therefore attempts to link the two concepts from a conceptual perspective, into the term credit risk. The study adopts the perspective of the credit theory of money that credit is money held in account of debt (Innes, 1914) and which is repayable at a future date. Innes (1914) observed that money has been widely understood to represent debt, and credit results from a financial obligation of one party towards another party. Thus, the credit holder expects the debt holder to fulfil a financial obligation, which is determined by the agreement under which the obligation is held (Bernanke & Blinder, 1989). The creditor has the right to payment and the debtor has the obligation to pay his/her debt. Moreover, the theory indicates that the creditor

has the obligation to release the debtor by the tender of an equivalent debt owed by the creditor, and the obligation of the creditor to accept this tender in satisfaction of his credit (Graeber, 2011).

The credit theory of money suggests that when an entrepreneur borrows from a bank, two obligations come forth. First, the entrepreneur has the obligation to pay the debt owed to the bank according to the stipulated and signed contract terms and second, the bank has an obligation to hold the entrepreneur in debts and to clear the entrepreneur of all debts after the debt has been paid (Diamond & Rajan, 2006). The theory also suggests that lending to an SME is a contractual agreement between the bank and the SME. It is an agreement requiring the fulfilment of obligations on both parties and a default in those obligations by either party may have negative consequences on the relationship between the parties, such as refusal to grant future loans to a defaulter (Graeber, 2011).

**Finance distress theory**

Baldwin and Scott (1983) purported that when a firm's business deteriorates to the point where it cannot meet its financial obligation, the firm is said to have entered the state of financial distress. The first signals of financial distress are violations of debt payments and failure or reduction of dividends payouts. Whitaker (1999) defines entry in financial distress as the first year in which cash flows are less than current maturities‟ long-term debt. The firm has enough to pay its creditors as long as the cash flows exceeds the current debt obligations. The key factor in identifying firms in financial distress is their inability to meet contractual debt obligations.

However, substantial financial distress effects are incurred well prior to default. Wruck (1990) stated that firms enter into financial distress as a result of economic distress, declines in their performance and poor management especially on risks. Boritz (1991) depicts a process of a financial distress that begins with an incubation period characterized by a set of bad economic conditions and poor management which commits costly mistakes. In the case of commercial banks, in ability to provide cash to depositors and loans to borrowers as and when the demand may constitute a liquidity crisis and poor asset. Other creditors also need to be taken into account when firms are putting in place risk management measures. Credit risks in banks also need to be addressed since it may lead to financial distress. Loan portfolio management is an important determinant of the firm's liquidity. The banks should manage the credit and liquidity risk in order to avoid the financial distress.

The theory of financial distress emanates from the liquidity and credit risk facing a firm. This theory provides for a non-biased perspective on the relationship between credit risk and financial performance variables employed by the study.

**The Basel Capital Accord and Banking in Ghana**

The introduction of the Basel Capital Accord in 1988 has offered for the implementation of a credit risk measurement framework with a minimum permanent capital ratio of 8% by the end of 1992 In 1995 the capital requirements for credit risk were modified to incorporate netting. In 1996 the Accord was modified to factor in a capital charge for market risk. Sophisticated banks could base their capital charge on a value-a-t risk (VaR) calculation, Hull, (2007). The Basel committee suggested some changes which

were intended to be operationalised in 2007. The new capital accord (Basel II) framework under Pillar 1 offers three (3) main approaches for the calculation of capital requirements. These are standardized approach, the foundation and Internal Rating Basel (IRB) Approach and the Advanced IRB Approach.

The Bank of Ghana (BoG) has done a number of consultations in the Ghanaian banking industry and has concluded to adopt the standardized Approach for computing the capital requirement for credit risk. This approach has two (2) main methods. These are internal credit ratings approach which is subject to the prior explicit approval of the supervisor and the other alternative is the use of the external credit assessment approach.

The Capital Adequacy Framework for capital requirement directive issued by Bank of Ghana (BoG, 2008), stipulated that locally incorporated licensed banks were to adopt the standardized approach with the credit ratings specified in calculating their capital requirements. BoG recognized both the simple and comprehensive approaches for credit mitigation. It also specified eligible final collateral, allowed as credit risk mitigants for the purpose of calculating capital requirements for credit risk. Consequently, the Basel II has been in operation since the beginning of 2012, representing the most significant change to the supervision of banks. The focus is on establishing the capital banks require, given their risk profiles and improve risk management. The new capital requirements may lead to an improved buffer for risk absorption in the industry.

**The Concept of Risk**

In the field of safety and health, risk is linked with possible hazards and dangers, while in finance it is a technical matter of unpredictability in

expected outcomes, both negative and positive. In other businesses and political settings, risk is closely associated with the spirit of enterprise and value creation (Power, 2007). Ewald, (1991) states: "Nothing is a risk in itself; there is no risk in reality. But on the other hand anything can be a risk; it all depends on how one analyses the danger, consider the event" (p.199). Ale (2009) defined risk as "the objectified uncertainty regarding the occurrence of an undesired event". Risk is inherent in any walk of life and can be associated with every human decision-making action of which the consequences are uncertain.

Over the last decades, risk analysis and corporate risk management activities have become very important elements for both financial as well as non-financial corporations. Firms are exposed to different sources of risk, which can be divided into operational risks and financial risks.

Operational risks – or alternatively business risks – relate to the uncertainty regarding the firm's investments and investment opportunities, and are influenced by the product markets in which a firm operates. In addition to operational risks, unexpected changes in e.g. interest rates, exchange rates, and oil prices create financial risks for individual companies. As opposed to operational risks, which influence a specific firm or industry, financial risks are market-wide risks that can affect the financial performance of companies in the whole economy. Both kinds of risk exposure can have substantial impact on the value of a firm.

**The Concept of Credit Risk**

According to Abor (2005) risk management has received extensive attention from both the corporate world and the academia, because, as Shimpi

(2001) puts it, it is the life blood of every organization and corporate officers to deal with it decisively wherever it appears.

Credit risk, or the risk that money owed is not repaid, has been prevalent in banking history. It is a principal and perhaps the most important risk type that has been presented in finance, commerce and trade transactions from ancient cultures till today (Andreau & Lloyd, 1999). This is probably due to the fact that lending has been, by far, the mainstay of monetary and financial institutions.

Generally, the concept of credit risk is conceived of as the chance that a debtor or issuer of a financial instrument, whether an individual, a company, or a country, will not repay principal and other investment-related cash flows according to the terms specified in a credit agreement (Greuning & Bratanovic, 2009). Credit risk can therefore be defined as the potential that borrower or counterparty will fail to meet its obligations in accordance with the terms and conditions of the contract (Dowd, Bartlett, Chaplin, Kelliher & O'Brien, 2008; Duffie & Singleton, 2003).

Credit risk includes both the risk that a obligator or counterparty fails to comply with their obligation to service debt (default risk) and the risk of a decline in the credit standing of the obligor or counterparty. While default triggers a total or partial loss of any amount lent to the obligor or counterparty, a deterioration of the credit standing leads to the increase of the possibility of default. In the market universe, a deterioration of credit standing of a borrower does materialise into a loss because it triggers an upward move of the required market yield to compensate the higher risk and triggers a value decline (Bessis, 2010). Normally the financial condition of the borrower as well as the

current value of any underlying collateral are of considerable interest to banks when evaluating the credit risks of obligors or counterparties (Santomero, 1997). According to Greuning and Bratanovic (2009), formal policies laid down by the board of directors of a bank and implemented by management plays a vital part in credit risk management. As a matter of fact, a bank uses a credit or lending policy to outline the scope and allocation of a bank's credit facilities and the manner in which a credit portfolio is managed that is, how investment and financing assets are originated, appraised, supervised, and collected.

There are also minimum standards set by regulators for managing credit risk. These cover the identification of existing and potential risks, the definition of policies that express the bank's risk management philosophy, and the setting of parameters within which credit risk will be controlled. There are typically three kinds of policies related to credit risk management. The first set aims to limit or reduce credit risk, which include policies on concentration and large exposures, diversification, lending to connected parties, and overexposure. The second set aims at classifying assets by mandating periodic evaluation of the collectability of the portfolio of credit instruments. The third set of policies aims to make provision for loss or make allowances at a level adequate to absorb anticipated loss (Boahene, Dasah & Agyei, 2012).

In the banking sector, credit risk typically refers to delayed or defaulted payments, which often causes cash flow problems and affect a bank's liquidity (Cebenoyan & Strahan, 2002). Bessis (2010) also defined credit risk as the losses incurred in the event of the bank's counter party or in the event of deterioration in the client's credit quality. In Bessis' (2010)

definition, losses range from temporary delay of payments to chronic counterparty's inability to meet its financial obligations, which often ends in formal bankruptcy. Rose and Hudgins (2008), on the other hand, defined credit risks in terms of the probability that some financial institution's asset, especially its loan will decline in value and perhaps become worthless.

The various concepts of credit risk, therefore, agree that credit risk is risk of loss to a bank through default by an obligor, in which a counterparty of a transaction is unable to meet the agreed upon obligation of principal and interest repayment (Duffie & Singleton, 2003). The degree of impact of the default is however dependent on whether the default occurs before the value date or on the value date of the contract.

**Types of Credit Risk**

Derban, Binner and Mullineux (2005) established that microfinance institutions (MFIs) are often at a high exposure to credit risk, since most loans advanced by MFIs are unsecured. Studies have shown that banks are exposed to one or a combination of different types of credit risks. On one hand, Culp and Neves (1998) categorised credit risks into default risk and resale risk, whereas Hennie (2003) emphasised that credit risks include consumer risk, corporate risk and sovereign or country risks. From another perspective, Horcher (2005) defined six types of credit risks, including default risk, counterparty pre-settlement risk, counterparty settlement risk, legal risk, country or sovereign risk and concentration risk. Gardener (2007), however, argues that legal risk is more likely to be considered as independent or belonging to operational risk and concentration risk. Adverse selection as well as moral hazard is more reasonably considered as an important issue in

managing credit risk rather than a type of the risk itself. Thus, Horcher's (2005) four other classifications are discussed in the subsequent sections.

According to Horcher (2005) traditional credit risk relates to the default on a payment, especially lending or sales where the likelihood of the default is termed the probability of default. Default risk, therefore, refers to a situation where the lenders are unable to recover the loans that have been extended or the borrowers fail to fulfil their financial obligations at the stipulated time due to various reasons (Hull, Nelken & White, 2004). Xiuzhu (2007) explains that when a default occurs, the amount at risk may be as much as the whole liability, which can be recovered later, depending on factors like the creditors' legal status. However, later collections are generally difficult or even impossible in that huge outstanding obligations or losses are usually the reasons why organisations fail. Default risks can be associated with Hennie's (2003) concept of consumer risk, corporate risk and sovereign or country risks, because retail and corporate clients, as well as government agencies, in theory can default on loans. However, credit default risk is often associated with consumers (retail clients) and corporate clients and thus most banking institutions device strategies targeting the reduction or possible elimination of default risk among retail and corporate clients (Greuning & Bratanovic, 2003).

Credit risks can also take the forms of pre-settlement risk or settlement risk. Pre-settlement risks are the probability that one party of a contract will fail to meet the terms of the contract and default before the contract's settlement date, prematurely ending the contract (Horcher, 2005). Settlement risk, on the other hand, refers to the situation where one party to a contract fails to pay money or deliver assets to another party at the settlement time,

which can be associated with any timing differences in settlement (Casu, Girardone & Molyneux, 2006).

Horcher (2005) also points out that these risks are often related with foreign exchange trading, where payments in different money centres are not made simultaneously and volumes are huge. In this sense, settlement risk is the risk that a counterparty does not deliver a security or its value in cash as per agreement when the security was traded after the other counterparty or counterparties have already delivered security or cash value as per the trade agreement (Arsov & Gizycki, 2003). The different types of credit risks can be measured in quantitative and qualitative terms which make the concept of credit risk practically measurable (Andersson, Uryasev, Masusser & Rosen, 2000).

The importance of measures of credit risk is to be able to transverse an abstract idea of credit risk to a format that lends itself to computational analysis, showing trends, allowing comparison, and testing for hypothetical and theoretical assumptions about credit risks, as they apply to a particular institution (D'Vari, Yalamanchili & Bai, 2003). In this sense, D'Vari, Yalamanchili and Bai (2003) assert that concentration risk, they classify as a type of credit risk is better described as a measure of credit risk.

Allen and Powell (2008) buttress the argument that concentration risk represents the overall spread of a bank's outstanding accounts over the number or variety of debtors to whom the bank has lent money. This risk is calculated using a concentration ratio which explains what percentage of the outstanding accounts each bank loan represents. Higher concentration ratios depict lesser levels of diversification of a bank's loan portfolio, which in turn represents a

high level of credit risk. Two forms of concentration risks may result, which are name concentration risk and sectoral concentration risk (Crosbie & Bohn, 2003). Name concentration risk results from uneven distribution of exposures (or loan) to its borrowers, whereas sectoral concentration risk can arise from uneven distribution of exposures to particular sectors, regions, industries or products.

In general terms, however, credit risk can be analysed in terms of non-performing loans expressed as a ratio of assets, core earning, or to common equity and loan loss. In this context non-performing loans refer to a sum of borrowed money upon which the debtor has not made his or her scheduled payments for at least 90 days (Mauser & Rosen, 1999). As a percentage of total gross loans, the non-performing loans represent the value of non-performing loans divided by the total value of the loan portfolio (including non-performing loans before the deduction of specific loan-loss provisions). The loan amount recorded as non-performing represents the gross value of the loan as recorded on the balance sheet, not just the amount that is overdue (Crosbie & Bohn, 2003). Higher non-performing to total gross loans ratio indicates higher levels of credit default risk for the bank.

According to the World Bank statistics for the average non-performing to total gross loans ratio for banks around the globe, Ghana's non-performing to total gross loans ratio has steadily decreased from 16.2 percent in the year 2009 to 12 percent in 2013 (World Bank, 2014). However, some countries such as Luxembourg, Sweden and Singapore have average non-performing to total gross loans ratio as low as 0.2 percent, 0.6 percent and 0.9 percent, respectively. In Africa, Lesotho, Morocco and Nigeria's non-performing to

total gross loans ratio, as at the year 2013, were respectively, 4.1 percent, 5.4 percent and 3.2 percent (World Bank, 2014).

Another measure for operationalising the concept of credit risk is the ratio of charge-offs to loans and leases, which represent the proportion of loans and leases which are written off as bad debts. Higher ratios of charge-offs to loans indicate that high proportions of loans and leases result in bad debts (Stein, 2002). According to Andersson, Uryasev, Mausser and Rosen (2000), this indicator shows trends in the credit quality of a bank. In the event of a charge-off, some proportion of the bank's capital is signed off as bad-debt, and the credit risks posed in this situation can be measured by the proportion of non-performing loans to loan loss reserve or tangible equity. Allen and Powell (2008) emphasise that it is a conservative ratio that measures the extent of capital erosion in the event that a bank has to charge off all of its non-performing loans and leases.

Conversely, Stein (2002) noted that the earn-out ratio or the non-performing loans to core earning is accurate measure of credit performance because it illustrates the relationship of nonperforming loans to pre-provision loan-loss earnings, measuring the payout ratio of future loan losses from internally generated cash flow. Bharath and Shumway (2004) also indicate that these measures of credit risks and credit performance reflect the credit risk management performance of a bank. Thus, banks have the responsibility to their shareholders and to their clients to effectively control and minimise credit risks. The measures of credit risk performance, according to Chan, Faff and Koffman (2008), are quite unique for microfinance institutions, given that their credit schemes are often unsecured.

**Bank Profitability**

Bank's profitability is of vital importance for investors, stakeholders and the economy at large. Investors are interested in the returns for their investment. Banks' performance is the ability of a bank to achieve its objectives using its available resources. Bank's performance appraisal is an evaluation which is done periodically and systematically in determining the achievements of the company's objectives (Amelia, 2012). For this, ROA would be used in the studies to measure profitability of the study banks. This ROA is most sustainable because they are measure of efficiency, by revealing how effectively and efficiently a bank utilizes the total asset at its disposal.

Profitability is a type of performance measure which focuses on the relationship between revenues and expenses and on the level of profits with relative to the size of investment in the business (Zhou & Ruland, 2006). Four most commonly noted measures of firm profitability are: the rate of return on firm's total assets (ROA), the rate of return on firm's equity (ROE), operating profit margin and net firm income.

Return on equity (ROE) is a measure of profitability that calculates how many cedis of profit a company generates with each cedi of shareholders' equity. The formula for ROE is: ROE =Net Profit/Shareholders' Equity. ROE is sometimes called "return on net worth."

Return on assets (ROA) is an indicator of how profitable a company is relative to its total assets. ROA gives an idea as to how efficient management is at using its assets to generate earnings.

Calculated by dividing a company's annual earnings by its total assets, ROA is displayed as a percentage. ROA = Net profit / Total Assets.

**Credit Risk Management**

Credit risk management is very vital to measuring and optimizing the profitability of banks. The long term success of any banking institution depended on effective system that ensures repayments of loans by borrowers which was critical in dealing with asymmetric information problems, thus, reduced the level of loan losses. Effective credit risk management system involved establishing a suitable credit risk environment; operating under a sound credit granting process, maintaining an appropriate credit administration that involves monitoring, processing as well as enough controls over credit risk (Greuning and Bratanovic 2003). Top management must ensure, in managing credit risk, that all guidelines are properly communicated throughout the organization and that everybody involved in credit risk management understands what is required of him/her.

Sound credit risk management system (which include risk identification, measurement, assessment, monitoring and control) are policies and strategies (guidelines) which clearly outline the purview and allocation of a bank credit facilities and the way in which credit portfolio is managed; that is, how loans were originated, appraised, supervised and collected (Basel, 1999; Greuning and Bratanovic 2003, Pricewaterhouse, 1994). The activity of screening borrowers had widely been recommended by, among other, Derban et al, (2005). The theory of asymmetric information from prospective borrowers becomes critical in achieving effective screening.

In screening loan applicants, both qualitative and quantitative techniques should be used with due consideration for their relative strength and weaknesses. It must be stressed that borrowers attributes, assessed through

qualitative models can be assigned numbers with the sum of values compared to a threshold. This technique is termed as "credit scoring" (Heffernan, 1996). The rating systems, if meaningful, should signal changes in expected level of loan loss (Santomero, 1997). Chijoriga (1997) posited that quantitative models make it possible to among others, numerically establish which factors are important in explaining default risk, evaluate the relative degree of importance of the factors, improving the pricing of default risk, be more able to screen out bad loans application and be in a better position of calculate any reserve needed to meet anticipated future loan losses.

Establishing a clear process for approving new credit and extending existing credit (Heffernan, 1996) and monitoring credits granted to borrowers (Mwisho, 2001) are considered important when managing credit risk (Heffernan, 1996). Instruments such as covenants, collateral, credit rationing, loan securitization and syndication have been used by banks in developing countries in controlling credit losses. (Benveniste & Bergar 1987). It has also been identified that high-quality credit risk management staff are critical to ensuring that the depth of knowledge and judgment needed is always available, thus ensuring the successfully management of credit risk in banks (Koford & Tschoegl, 1997; Wyman, 1999).

**Credit Portfolio Management**

Supervisors of banks more often than not, place considerable importance on formal policies which are laid down by their boards and aggressively implemented by management. This is most critical with regard to banks' lending function, which stated that banks adopted sound systems for managing credit risk (Greuning & Bratanovic, 1999). In order to appropriately

analyse credit risk factors, banks' chief credit risk officers are required to have detail understanding of the principal economic factors that drive loan portfolio performance and the relationship between those factors.

Most credit risk officers in the banking industry analyse factors such as; inflation, the level of interest rates, the GDP rate, market value of collaterals among others, for banks in mortgage financing. Also, traditional financial management texts posit that credit manager would take note of the five Cs of credit – character, capacity, capital, collateral and conditions to evaluate the probability of default (Casu et al, 2006; Zech, 2003). These factors are in line with the arbitrage pricing theory of Stephen Ross which is the most applicable to loan portfolio management.

According to Uyemura and Deventer, (1993), many techniques in equity portfolio management were applicable in individual loans or loan category which can be measured by the dependence of the loan's return on the factors mentioned.

**Value at – Risk (VaR) As a Tool for Portfolio Optimization**

VaR measures portfolio risk by estimating the loss in line with a given small probability of occurrence. A higher risk means a higher loss at the given probability. It is intended to overcome the shortcomings of modern portfolio theory when standard deviation is used as a measure of risk in risk-return relationships VaR is a forecast of a given percentile usually in the lower tail (such as 99th percentile) of the distribution of returns (or losses) on a portfolio over some period. Again it is an estimate to be equaled or exceeded with a given, small probability such as 1%. However, when returns are normally distributed, VaR conveys exactly the same as the information as standard

deviations. The VaR approach is the most preferred to be used when the market risk is measured (Schacter, 1998: Zech, 2003: Markowitz, 1959: Hull, 2007).

**Financial Risk Management**

Risk is commonly associated with uncertainty, as the event may or may not happen. It is an essential part of business, because enterprises cannot function without taking risks as business grows through risk taking. According to Res et al., (2016) risk management consists of a series of steps, which establishing the context, identifying, analyzing, assessing, treating, monitoring and communicating risks, which allow continuous improvement of decision making. The essential functions of financial risk management are to identify measure and more importantly monitor the profile of the bank. Soyemi (2014). Kambi & Ali, (2016), Stephen, N. Akele, (2014), Yousfi, (2014), Ghani, (2015), Res et al., (2016), Soyemi, (2014), Oluwafemi et al., (2013), Olamide, Uwalomwa, and Ranti, (2015) posited that risk management play an important role in determining the overall performance of banks.

Liquidity Risk is a risk of insufficient liquid assets to meet payouts from policies (surrender, expenses, maturities, etc.), forcing the sale of assets at lower prices, leading to losses, despite company being solvent (kamau, & Njeru, 2016). Liquidity risk arises due to two reasons, one on the liability side and other on the asset side (Sonjai, 2008). According to Yousfi (2014), the potential loss arising from the Bank's inability either to meet its obligations or to invest fund increases in assets as they fall due without incurring unacceptable costs or losses. Form this definition it's obvious that liquidity

risk doesn't means just the shortage in financial resources but also the excess of these unused funds.

Credit risk is the risk that a borrower will not perform in accordance with its obligations. Credit risk may arise from either an inability or unwillingness on the part of the borrower to perform in the pre-committed contracted manner (Anthony et al., 1997). Credit risk arises whenever a lender is exposed to loss from a borrower, counterparty, or an obligator who fails to honour their debt obligation as they have contracted (Luy, 2010). Credit risks can result in the erosion of a banks' capital. Credit risk is the biggest risk faced by banks and financial intermediaries (Gray, Cassidy, & RBA., 1997). The indicators of credit risk include the level of bad loans (Non- performing loans), problem loans or provision for loan losses (Jiménez & Saurina, 2006). Furthermore, (Yimka et al., 2015) state that the main sources of credit risk include, limited institutional capacity, inappropriate credit policies, volatile interest rates, poor management, inappropriate laws, low capital and liquidity levels, directed lending, massive licensing of banks, poor loan underwriting, reckless lending, poor credit assessment, no non-executive directors, poor loan underwriting, laxity in credit assessment, poor lending practices, government interference and inadequate supervision by the central bank.

Capital Adequacy Ratio (CAR) is basically the proportion of the banks' tier 1 and 2 equity (Qualifying Capital or Equity) as a proportion of its risk weighted assets (loans). It is the proportion of a bank's own equity in relation to its risk exposure. Capital adequacy is a measure of bank`s financial strength since it shows the ability to withstand/ tolerate with operational and abnormal losses. It also represents the ability to undertake additional business

(Habtamu, 2012). As noted by Makri et al. (2014), CAR determines risk behavior of banks. It is a measure of banks solvency and ability to absorb risk. Thus, this ratio is used to protect depositors and promote stability and efficiency of financial systems. It is measured by total Equity to total asset ratio. The ratio of equity to total assets is considered one of the basic ratios for capital strength. It is expected that the higher this ratio, the lower the need for external funding and the higher the profitability of the bank. It shows the ability of bank to absorb losses and handle risk exposure with shareholder. Equity to total assets ratio is expected to have positive relation with performance that well-capitalized banks face lower costs of going bankrupt which reduces their costs of funding and risks (Berger, 1995; Bourke, 1989; Hassan & Bashir, 2003).

**Empirical Review**

This section covers researches conducted by individuals, firms or companies, authorities among others that are related or relevant to the subject understudied. This may be locally or internationally. Information on such studies are highlighted subsequently.

**Leverage and Performance of Banks**

The impact of financial leverage and performance has been studied by the abundance of research in the literature. The famous influential paper by Modigliani and Miller (1958) has developed different theoretical predictions to build a solid foundation of the relationship between financial leverage and firm value. The previous studies results remain unclear in determining this relationship. For example, Fama and French (2002), Gill, Biger, and Mathur (2011), Ramachandran and Candasamy (2011), Wang (2003) and Goyal

(2013) find a positive relationship between leverage and profitability. On the other hand, Pouraghajan and Malekian (2012), Olokoyo (2013), Quang and Xin (2014), Sheikh and Wang (2013), Mireku, Mensah, and Ogoe (2014), Krishnan and Moyer (1997) and King and Santor (2008) find a negative relationship between leverage and firm performance.

Modigliant and Miller (1958) expected that capital structure of a firm is irrelevant to its performance. However, capital structure affects the tax-deductibility of debt interest and agency theory. Myers (1997) expected that leverage may affect the investment and reduce the market value of the firm. Titman (1984) argues that leverage affects the likelihood of a firm's liquidation. Maksimovic and Titman (1991) suggest that a high level of leverage has a negative effect on firm performance. Philips and Sipahioglu (2004) reported insignificant results between financial leverage and firm performance. Based on previous literature, empirical conclusions have mixed results. Some report negative relationship while others report positive a or insignificant effect.

Some studies suggest that the relationship between the leverage and performance is conditional on the degree of agency problem associated with firms. For example, Schoubben and Van Hulle (2005) show that leverage has a positive effect on quoted firms but a negative on non-quoted firms. Ruland and Zhou (2005) find that leverage improves the performance of diversified firms.

Ahmed, Awals and Kashif (2018) studied financial levearage and firm's performance using firms listed in Pakistan Stock Exchange KSE 100 index. Panel data was collated including companies from various non-financial

sectors with financial records of ten years or more. Basing the study on the leverage and profitability only firms with considerable debt to capital ratios were analysed all belonging to non-financial sector where the analysis is precise on statistically proving the leverage variables selected in the study as significant or non-significant to the profitability of the firm.

With past examinations, Lis and Zou (2012) researched the connection between credit risk management and profitablity of business banks in Europe from 2008 to 2012. The creators gathered information from the biggest 48 business banks in Europe and dissected them utilizing multivariate relapse examination. The investigation utilized capital ampleness proportion and non-performing risk proportion as intermediaries for credit risk the management, and ROA and ROE as intermediaries for profitablity. The general discoveries of this investigation show that credit risk management positively affects the productivity of business banks in Europe, implying that the better the credit risks management, the higher is the profitability of business bank.

Moreover, Alshatti (2015) examined the impact of credit risk pointers on banks' financial performance during the time of 2005 to 2013 utilizing thirteen business banks of Jordan. The creator utilized optional sources to gather information through yearly reports of test banks and completed board relapse investigation study. The credit risk management markers utilized right now capital ampleness proportion, credit intrigue/credit offices, arrangement for offices shortfall/net offices, influence proportion and level of non-performing loans. The bank financial performance related pointers are ROA and ROE. The discoveries of this examination show that there is a constructive outcome of non-performing loan/net credits on banks' financial

presentation and a negative impact of arrangement for offices loans/net offices proportion on banks' financial performance.

Thaddeus and Chigbu (2012) studied the effect of financial leverage on bank performance using six banks from Nigeria. The study made use of secondary data from Nigerian Stock Exchange fact book and the financial statements of the sampled banks. Debt-equity and coverage ratios were used to measure financial leverage which was the independent variable, while earning per share (EPS) represented performance as the dependent variable. Multiple regression technique was used to establish whether relationship exist between financial leverage and performance of sampled banks. The findings showed mixed results. While some banks reported positive relationship between leverage and performance, others revealed negative relationship between leverage and performance.

Abubakar (2015) investigated the relationship between financial leverage and financial performance of deposit money banks in Nigeria, with specific reference to how debt- equity ratio and debt ratio affect return on equity of deposit money banks in Nigeria. Eleven deposit money banks from Tier 1, Tier 2 and Tier 3 classification of banks were sampled using convenience sampling technique for the period 2005- 2013. This study adopted both descriptive and correlation analysis. Findings from the descriptive analysis show that about 84% of total assets of deposit money banks in Nigeria are financed by debts, confirming that banks are highly levered financial institutions. The correlation analysis revealed a significant relationship between debt-equity ratio and financial performance proxy by

return on equity. However, no significant relationship was found between debt ratio and ROE.

**Non-Performing Loans Ratio and Performance of Commercial Banks**

Some scholars e.g., (Li Yuqi 2007; Naceur & Kandil 2006; Kinthinji 2010; Kolapo, Ayeni & Ojo 2012; Kargi 2011) amongst others have carried out extensive studies on this topic and produced mixed results; while some found that credit risk impact positively on banks financial performance, some found negative relationship and others suggest that other factors apart from credit risk management impacts on bank's performance. Specifically, Kargi (2011) found in a study of Nigeria banks from 2004 to 2008 that there is a significant relationship between banks performance and credit risk. He found that loans and advances and non-performing loans are major variables that determine asset quality of a bank.

Also, Yimka et al., (2015) examines the credit risk management and financial performance of selected ten (10) commercial banks listed on Nigeria Stock exchange from 2006 to 2010. The study analyzes the impact of these antecedents such as loan and advance loss provision, total loan and advances, non- performing loan and total asset on accounting Return on Equity (ROE) and Return on Asset (ROA). The results reveal that credit risk management has Non-performing loan; significant effect on financial performance of commercial banks.

In an examination of the Kenyan keeping cash industry, Kithinji (2010) showed that there is an underhanded relationship between non-performing advances, a pointer of recognizes threat for profitability. Other precise studies outside Africa have developed an in number critical

relationship between credit peril and banks execution. A valid study in Qatar, Achou and Tengue (2008) showed that better credit peril organization result in better bank execution. They assume that, "it is thusly of dire noteworthiness for banks to sharpen wise credit risk organization to shield the upside of the bank and guarantee monetary pros premium". Achou and Tengue further showed that spares cash with strong credit peril organization procedures tend to procure lower development default (incapacitated advances) and net premium compensation.

Afriyie and Akotey (2013) in their study take a gander at the impact of credit threat organization on the productivity of natural and gathering banks in the Brong Ahafo Region of Ghana. They used the fiscal clarifications of ten natural banks from the season of 2006 to 2010 (five years) for our examination. The board backslide model was used for the estimation. In the model, importance of Return on Equity (ROE) and Return on Asset (ROA) were used as advantage marker while Non-Performing Loans Ratio (NLPR) and Capital Adequacy Ratio (CAR) as credit threat organization pointers. The revelations show a gigantic conversely relationship between non-performing credits and natural banks' productivity revealing that, there are higher development mishaps yet banks still win advantage. This exhibits that, rural banks don't have sound and convincing credit danger organization sharpens".

Brewer and Jackson (2006) regards non-performing loan ratio (NPLR) as a significant economic indicator. It implies that lower NPLR is related with the lower risk and deposit rate. Meanwhile, there might be a positive relationship between deposit rate and NPLR based on the possibility that bank’s deposit base will be increased by the high deposit rate for funding high

risk loans. And the increasing high-risk loans might enhance the probability of higher NPLR. So that the allocation of banks risk management deeply relies on the diversification of credit risk to decrease the NPL amount. NPL is also a probability of loss which requires provision.

Other studies also show a close relationship between NPLR and credit risk management. For example, Brewer and Jackson (2006) involves non-performing loans (NPLs) to total assets ratio (NPLR) as an indication of efficient management of credit risk. In addition, Tafri et al. (2009) examine the relationship between credit risk and profitability of the conventional and Islamic banks in Malaysia between the periods from 1996 to 2005. And found a significant relationship among them. The researcher use *"proportion of allowance for the loan loss to total assets"* (Tafri et al., 2009) which has a close relationship with NPLR to represent the credit risk. And in the beginning of Tafri et al. (2009) research, they emphasize that profitability as an *"ultimate"* test for the effectiveness of risk management.

Klein also finds NPLs are sensitive to bank-level factors. Better level of the bank's management which is measured by the profitability in previous period generates smaller NPLs (2013). Excessive risk taking valued by loans-to assets ratio and growth rate of bank's loans lead to higher NPLs in the subsequent periods. And these bank-level effects are significant during both the pre-crisis and post-crisis periods (Klein, 2013).

Conclusively, the relationship between risk management and profitability will be summarized in this paragraph. Profit is the ultimate goal of commercial banks so that all strategies designed and activities performed are meant to realize this grand objective (Ongore & Kusa, 2013). Improving

financial performance requires improved functions and activities of commercial banks (Nimalathasan, 2008). However, when a bank increases and maximizes its profit, it must either increase risk or lower its operating cost (Ruziqa, 2013). Koch and MacDonald (2000) argue that a bank's profitability will generally vary directly with the riskiness of its portfolio and operations. As a result, in order to increase the return, banks need to know which risk factors have greater impact on profitability which eventually leads to bank financial performance.

And indicated earlier, credit risk is the most significant factors for commercial banks. This means the probability where the credit risk influences the profitability is large. According to Tafri et al. (2009), risk management is important both for banks and policy makers because a strong banking system can promote financial stability of a country and increase economy's resilience in facing economy crisis. Therefore, the study and measure of effect of credit risk on some selected commercial bank's profitability.

**Chapter Summary**

This section reviewed relevant literature related to credit risk and financial performance. It review two theories: credit theory of money and Finance distress theory that underpinned the study. Also, concepts such as risk, credit risk, types of risk were reviewed. Lastly, empirical studies related to credit risk indicators such as CAR and NPLR and performance such as ROE and ROA were discussed.

# CHAPTER THREE

# RESEARCH METHODS

## Introduction

This section of the investigation basically looks to provide for the particular strategies and techniques employed in undertaking this research. The whole section clearly explains the methods through which these techniques are used and how successfully they add to the realization of the set goals. Eminent inside the segment are top to bottom data with respect to the Research Design, Organizational Profile, Population, Sample and Sampling methods which are utilized in doing this exploration. Additional data is given concerning the Data type and source, and Mode of Analysis.

## Research Approach

This study used a quantitative approach which stresses objective estimations and the factual, statistical, or numerical analysis of information is gathered through surveys, polls, and surveys. Quantitative research centers around social event numerical information and summing it up across groups of individuals or to clarify a specific wonder. Quantitative research focuses in numbers, rationale, and a than divergent reasoning. Quantitative research centers around numeric and perpetual information and nitty gritty, united thinking as opposed to unique thinking (Creswell, 2005). Quantitative research is normally governed by hypotheses stated before the start of the investigation. In quantitative research, data are captured in numerical form and analysed quantitatively (Teddlie & Tashakkori, 2010). The philosophical foundation of quantitative design is grounded in the positivist epistemology,

which places emphasis on quantification, objectivity and deductive logic (Tuli, 2010).

The objective in leading quantitative research study is to decide the relationship between one thing (an independent variable) and another (a dependent or outcome variable) inside a populace (Babbie, 2010). This investigation embraces the board information relapse model to pick up the most extreme potential perceptions to analyze the impacts of credit risk management on commecial banks' profitability of firms recorded on the Ghana Stock Exchange (GSE) for the period 2014 – 2018. To break down the information gathered and make vital suggestions to approach creators, the examination utilized the panel data analysis organized on the Ordinary Least Squares (OLS) relapse strategy.

**Research Design**

A research design is a plan, structure and strategy of the investigating responses to research questions or problems (Kerlinger & Lee, 2000). The researcher found quantitative research to be the most appropriate method with the feasibility of the research in mind. The quantitative method is cost effective and fast to execute. This opens up the possibility of statistical analyses ranging from simple averages to complex formulas and mathematical models (Babbie, 2005). The explanatory research design of the quantitative approach is employed for this study.

Explanatory research is a continuation of descriptive examination. The researcher goes past only depicting the attributes of the circumstance or issue, to breaking down and clarifying the why or how the wonder being contemplated is going on. In this way, explanatory research aims to

understand phenomena by discovering and measuring causal relations among them. In certain circles, it is alluded to as causal research structure Naceur and Kandil, (2008) Explanatory research as often as possible incorporates enlightening components yet goes past this to distinguish and investigate the fundamental the impacts and the idea of the connections between the dependent and independent variables. The investigation employed as explanatory design. This assists with inspecting the connection between factors. This design was proper since it helped with looking at the connection between credit risk management and firm performance.

**Data Screening Procedure**

In this study, consideration was given to firms with up to date records of Non-Performing Loans, Leverage (Total Debt to Total Net Asset) and size in their financial accounts from 2014-2018 on Ghana Stock Exchange. This eliminated firms without records of financial related and market activities adequate to assess information for the model determined to analyze the connection between credit risk management and performance. The last example for this examination comprises of ten (10) firms recorded on the GSE with data important and adequate to research the impact of credit risk management on the performance of firms in creating economies.

**Data Source**

The study used Secondary data. Secondary information is data gathered by others for purposes which can be not quite the same as the analyst's motivation. Secondary information incorporate both crude information and distributed synopses. The optional source of information were assembled from distributed articles, web, organization and ventures'

authentic insights. These incorporate thorough pay proclamations and budgetary archives of the recorded firms in the Ghana Stock Exchange database. Balanced panel information was worked from the inspected financial account of the ten (10) firms recorded on the Ghana Stock Exchange. These examined financial accounts were obtained from Annual Reports Ghana of the Ghana Stock Exchange from 2014 – 2018.

**Data Processing and Analysis**

Panel data analysis approach was employed in determining the relationship between credit risk management and profitability of banks. The study employed data on different variables for a period of time. This makes it a panel study type due to its longitudinal time dimension. Panel study is a type of longitudinal design in which the researcher examines the same people, phenomenon, group, or organization across multiple time points. Thus, data is gathered on the organization on different issues for more than an instance or over a period (Neuman, 2007). Moreover, this study types aids in observing the variation in the characteristics of the organization over a period.

In addition, irregular impact model was used. The irregular impact model is likewise used to investigate panel data and is regularly utilized when the varieties across substances are thought to be arbitrary and uncorrelated with the autonomous factors (Torres-Reynas, 2008). It depends on the suspicion that the contrast between elements has some impact on the needy variable (Torres-Reynas, 2008). It likewise accept that the element's mistake term isn't corresponded with the indicators which permit time-invariant factors as informative factors (Torres-Reynas, 2008).

To decide with respect to which model (fixed impact model and irregular impact model) best portrays the relationship, a Hausman test was completed to pick between two models utilizing STATA at five percent level of significance. The Hausman test assesses the invalid speculation that the coefficient evaluated by the irregular impact estimator is same as assessed by fixed impact estimator. In particular, the invalid speculation is that the favored model is irregular impacts versus the option fixed impacts (Greene, 2008). Following from the Hausman test, if the p-esteem is under α=0.05 the fixed impact model is superior to the arbitrary impact. Be that as it may, the p-esteem was more noteworthy than α=0.05.

This methodology has been utilized in comparative investigations that spread various banks and years (for example, Buyinza et al, 2010; Ahiawodzi and Sackey, 2010; Hassan and Bashir, 2003; Haron, 2004) and hence makes it appropriate for this examination. Also, the econometric styles of Keiko (2006), Samy (2003), Saira (2011) with hardly any alterations were received for the examination. The relapse yields were acquired using STATA (statistical data analysis software).

**Specification of the Empirical Model**

The empirical framework for the investigation of the link between credit risk management practices and listed banks' profitability is given as follows:

$$Xit = \beta_0 + \beta_1 NPL_{it} + \beta_{2L\ it} + \beta 3S + U_{it}$$

**Table 1: Meanings of the Determinants and Independent VAriables**

| Abbreviation | Variable | Meaning of variable |
|---|---|---|
| Xit | ROE (Return on equity) & ROA (Return on asset) | ROE is profit after tax divided by equity and ROA is profit after tax divided by asset. It measures the profitability of commercial bank *i* at time *t* |
| NPLit | NPL (Non-Performing loan) | NPL is the total loan losses of commercial banks *i* at time *t*. |
| Lit | Leverage (Total Debt to Total Net Asset) | Total Debt to Total Net Asset Asset for bank i at time t |
| S | Size | Log of total asset of Bank i at time t |

Source: Martin, (2020)

**Justification of the Research Variables**

**Return on Equity (ROE)**

This is a reliant variable and it quantifies the arrival on investors' interest in the bank. ROE was utilized as the pointer of the gainfulness in the relapse examination since ROE alongside ROA has been broadly utilized in before look into Ara, Bakaeva and Sun, J. (2009). It shows the adequacy of the executives in the use of the assets contributed by investors of a business bank.

**Non-Performing Loans (NPL):**

This is an independent variable and it is picked considering the way that it is a marker of credit risk management. NPL, explicitly, shows how banks manage their credit risk since it portrays the degree of loan loss

entirety as indicated by Total Loan whole (Hosna et al, 2009). We expect non-performing credits to have a negative relationship with RCBs performing.

**Leverage (L)**

Leverage results from using borrowed capital as a funding source when investing to expand the firm's asset base and generate returns on risk capital. Leverage is an investment strategy of using borrowed money specifically, the use of various financial instruments or borrowed capital to increase the potential return of an investment. Leverage can also refer to the amount of debt a firm uses to finance assets. When one refers to a company, property or investment as "highly leveraged," it means that item has more debt than equity.

**Size (S)**

In other studies which have focused on the credit risk management of banks, the total asset has been used to measure the size of banks. The cost of putting together information will drastically reduce where there is Economies of scale. (Boyd, & Runkle,1993) the effect of positive bank size is always linked with profitability. Akhavein, Berger and Humphrey, (1997) and Smirlock (1985) concluded from their study that there is a significantly positive relationship between the size of banks and profitability.

**Chapter Summary**

The study employed the quantitative research approach and explanatory design of which the targeted commercial banks were listed on the Ghana Stock Exchange (GSE) for the period 2014 – 2018. However, only those with accurate information about their financial statements from 2014 to

2018 were selected for the study. The study employed the panel data analysis structured on the Ordinary Least Squares (OLS) regression method to analysed the data.

# CHAPTER FOUR

# RESULTS AND DISCUSSION

## Introduction

The results on the credit risk and performance of selected commercial banks in Ghana which was assessed on panel data of banks for a period ranging from 2014-2018 is presented in this chapter.

This chapter also presents an analysis of the data obtained for the study in relation to the objectives stated. In this section, the collected data is analyzedwith the view of finding the effect between the study variables. Also, a descriptive statistic, test for multiple regression model assumptions, regression results and discussions were carried out in this chapter. The results are discussed and compared with existing literature on the subject.

## Descriptive Statistics

Table 2 gives the summary statistics of the main variables that have been included in the model including: minimum, maximum, mean, standard deviation of the variables: L, NPLR, S, ROE and ROA. The ROA and ROE are the dependent variables used to measure the performance of the commercial banks in terms of profits.

**Table 2: Descriptive Statistics**

| Variable | Observation | Mean | Std. Dev | Min | Max |
|---|---|---|---|---|---|
| L | 50 | 17.215 | 4.217 | 10.47 | 27.21 |
| NPLR | 50 | 15.343 | 9.341 | 2.27 | 45 |
| S | 50 | 0.2108 | 0.692 | -1 | 2.77 |
| ROA | 50 | 5.088 | 2.728 | -3.07 | 9.24 |
| ROE | 50 | 2.01 | 0.074 | -0.67 | 5.1 |

Source: Martin, (2020)

Table 2 shows that the normal (standard deviation) execution of the business banks in the examination was 5.088 (2.73). This portrays return on resources had the option to produce an arrival of 5.1 percent which is viewed as very great. Despite the fact that the normal execution was viewed as acceptable, however a few banks recorded appalling execution, in this way, the base recorded benefit was as low as - 3.07percent and as high as 9.24 percent. Obviously a few banks performed inadequately when contrasted with that of the business.

Table 2 shows that the normal (standard deviation) execution of the business banks in the investigation was 2.001 (0.074). This delineates value investors had the option to produce an arrival of 2.0 percent which is viewed as terrible. The normal execution was viewed as terrible because of the way that a few banks recorded appalling execution, therefore, the base recorded productivity was as low as - 0.67 percent and as high as 51 percent. Clearly a few banks performed inadequately when contrasted with that of the business.

Also, the ratio of non-performing loans to total loans and advances was astonishing. As high as 45 percent (9.34) of total loans and advances was

considered to be non-performing. This depicts that on average, the listed banks have been experiencing huge loans default within the seven-year period base on the maximum value whiles others are faced with as low as 2.27. Maximum value of 45 showed that some of the banks experienced very high non-performing loans. This is attributed to the fact that there are no stringent policies to evaluate, monitor and enforce the credit worthiness of the borrowers.

This in like manner certifies the different certifications that there is raised degree of default among borrowers in Ghana, a clarification which is generally given by banks as the explanation behind high financing cost in spite of the way that the prime rate has fallen by and large. This could be a direct result of macroeconomic factors. High credit risk markers explicitly, non-performing advances, were a direct result of macroeconomic shakiness that is, enacted by prohibitively eagerness/advancing rates, charges, commission and weakening of the cedis since the late 1990s whiles at a comparative period bank were making higher advantage in Ghana (Aboagye-Debrah, 2008).

This regardless, it is in like manner obvious that the raised degree of recognize risks as showed up by the more than two markers can't be said to be no matter how you look at it among the associations in the model taking into account the huge degrees of standard deviations. Leverage had a mean of 17.22, least of 10.47 and limit of 27.21 standard deviation estimation of 5.346 show high inconstancy in the recorded banks capital. This is acceptable since business banks can recover advances that have turned sour.

Size of bank had a mean of 0.218, least of - 1 and limit of 2.77 standard deviation estimation of 0.692 show high inconstancy in the recorded banks size.

**Unit Root or Stationary Test**

This test was done to determine whether a variable or variables can be described as stationary or non-stationary. It is done in assessing the appropriateness of the regression analysis test and it also help to determine whether financial data follows random walk hypothesis. Test for unit root in this study by using Fisher PP individual test which states that;

Ho; it has a unit root (not stationary)

H1; it has no unit root (stationary)

**Table 3 - Unit Root Test of the Credit Risk Variables using PP Fisher Test**

| Method | Statistics | Bandwidth | Observation | Prob. |
|---|---|---|---|---|
| PP – Fisher Chi-square | 71.5706 | | | 0.0000 |
| PP – Choi Z-stat | -6.34028 | | | 0.0204 |
| ROE | 6.2 | | | 0.0021 |
| ROA | 5.0 | | | 0.0000 |
| S | 6.0 | | | 0.0532 |
| L | 6.0 | | | 0.0415 |
| NPLR | 6.0 | | | 0.0510 |

Source: Martin, (2020)

From Table 3, comparing fisher chi-square test which is 0.0000 to 0.05 margin of alpha, we reject the null hypothesis which states that there is a

unit root and conclude that the test has no unit root and therefore it is stationary.

**Test for the Linear RegRession Model Assumptions**

**Tests for Multicollinearity**

Multicollinearity is a sign for a straight connection between autonomous factors (Gujarati, 2003). To test the presence or not-presence of multicolliniarity issue, Variable Inflation Factor (VIF) procedure was utilized. The fluctuation inflation factor, VIF, is a proportion of the equal of the supplement of the between relationship among the indicators: VIF=1/ (1-$r^2$) where $r^2$ is the multiple correlations between the predictor variable and other predictors. A decision rule for multicolliniarity test of the model states a variable whose VIF values are greater than 10 indicate the possible existence of problem of multicolliniarity. Tolerance, defined as 1/VIF is used by many researcher to check on the degree of co-linearity (Gujarati, 2003). The Table 4 shows the VIF and Tolerance of the variables.

**Table 4: Multicolliniarity Statistics**

| Variable | VIF | Tolerance (1/VIF) |
|---|---|---|
| ROE | 1.21 | 0.911123 |
| ROA | 1.11 | 0.922004 |
| S | 1.07 | 0.957850 |
| L | 2.05 | 0.757660 |
| NPLR | 3.24 | 0.315987 |
| Mean VIF | 1.60 | |

Source: Martin, (2020)

The result on model 1 and 2 from Table 4 showed that VIF values for all variables became less than the tolerable value i.e. VIF values of all variables are less than 10. It indicates that this model is free from multicolliniarity and there is no problem of multicolliniarity between the variables (in this model.)

**Table 5- Correlation Matrix**

| | ROE | ROA | S | TDA | NPLR |
|---|---|---|---|---|---|
| ROE | 1.0000 | | | | |
| ROA | 0.374 | 1.0000 | | | |
| S | 0.1519 | 0.3091 | 1.0000 | | |
| L | -0.5241 | -0.0314 | -0.247234 | 1.0000 | |
| NPLR | -0.2828 | -0.4172 | -0.0254 | -0.0844 | 1.0000 |

Source: Martin, (2020)

In this study, pair-wise relationship lattice is appeared at 5% level of critical. It shows the relationship among the individual factors. Table 4 shows that the most reduced connection is - 0.0844. Nonetheless, the most elevated connection was 0.374 among ROA and ROE. Since most elevated worth was 0.374 which is less than 0.80, there was no issue of multi-collinearity between the autonomous factors.

**Hausman Test**

In data examination two essential models are routinely used: Fixed effect and Random effect. Fixed effects model is used when you have to control blocked components that differentiate between cases yet are consistent after some time (Sayrs, 1988). This helps with following changes in the variables

after some an opportunity to survey the effect of self-sufficient factors on subordinate elements.

To settle on fixed effect and self-assertive effect the Hausman test is used. Hausman Test contrasts fixed effect and sporadic effect in STATA. Running a Hausman specific test at five (5) percent level engages the researcher to pick among fixed and subjective models. The Hausman Test surveys the Null hypothesis that the coefficient assessed by the subjective effect estimator is identical to the ones assessed by the reliable fixed effect estimator. In the event that the Hausman test is immaterial (Prob > Chi2 more noteworthy than .05), at that point the irregular impacts model will be utilized(Torres-Reyna2007).

```
    chi2(6)  =  (b-B)'[(V_b-V_B)^(-1)](b-B)
             =          5.04
Prob>chi2  =        0.5388
(V_b-V_B is not positive definite)
```

**Hausman Test**

Figure 1 shows that the theory which guaranteed that the coefficient assessed by the irregular impact estimator is equivalent to the ones evaluated by the steady fixed impact estimator is factually unimportant. Consequently, the arbitrary impact is utilized in clarifying the model or the impact of credit chance administration on the exhibition of chose recorded business relies upon Ghana Stock Exchange. Since the p-value (0.5388) is statistically insignificant, the null hypothesis (Random-effects model is appropriate) cannot be rejected. This concludes that the random-effects model is appropriate. The Hausman test suggests that Random Effects Regression model is the most appropriate model for the study as evidenced by the

Hausman Chi-sq. statistic of 5.04 with p-value of 0.5388. The study therefore selects the coefficients of the random effect model for further discussions.

**Results of Regression Analysis**

This regression analysis is based on the data collected on each commercial banks, from GSE 2014-2018. It depicted the effect of SIZE, Leverage (Total Debt to Total Net Asset) and Non-Performing Loan Ration on Return on Asset using the ten listed banks over the study period. A multiple regressions model was used to analyze using random effect Generalized Least Square (GLS) regression with robust control for any hetroscedasticsicty to avoid any bias results. Table 6 showed the regression output of the dependent variable and the explanatory variables of model 1.

**Table 6: Results of Panel Data Analysis on ROA**

| | Random Effect Model | | |
|---|---|---|---|
| Variables | Coef. | t-test | Prob. |
| (Constant) | 0.3165 | 2.18 | 0.023 |
| S | 0.0702 | 1.89 | 0.050 |
| L | -0.0249 | -0.18 | 0.227 |
| NPLR | -0.078 | -3.30 | 0.026 |
| R-sq | 0.34 | | |
| Wald $Chi^2$ | 11.28 | | |
| Prob. | 0.0103 | | |

Source: Martin, (2020)

Table 6 reports regression results between the reliant variable and informative factors. Because of a little model, the decent $R^2$ worth should be considered as it gives continuously definite estimation of the certifiable masses regard (Pallant, 2007). There is a general rule which can be used to choose the fair $R^2$ regard as follows:< 10%: poor fit, 11% to 30%:

unassuming fit, 31% to half: moderate fit, > half: solid fit. To assess the examination model, the estimation of $R^2$ has been considered to decide the measure of change in the needy variable which is clarified by all factors in the recipe (Pallant, 2007). With regards to the random effect model in Table 6, the adjusted $R^2$ is (0.34 or 34%). This indicates that the model was moderately fit and shows that only 34 percent of the variation in the dependent variable (ROA) can uniquely or jointly be explained by the independent variables (Size, L and NPLR). The remaining 66% can be explained by other factors that are not in the model. The Wald chi statistic (11.28) at p-value of 0.011 explains the overall significance of the model. This indicates that there is a significance relationship between the dependent variable (ROA) and all the other independent variables (SIZE, L and NPLR).

The results portray a negative relationship between Return on Equity (ROA) and Leverage (L). That is, from Table 6 when Leverage (Total Debt to Total Net Asset) increases by 1% Return on Equity (ROA) decrease by 0.0249. The negative coefficient of the regressor, L, indicate that when a firm has a greater Leverage Ratio, it influences its performance or profitability negatively and this may be a sign of poor credit risk management practices in place. However, this relationship was statistically not significant (p=0.227). This confirms that of Afriyie and Akotey (2013) study which focused on the effect of L and NPLR on ROA and ROE of natural banks in Brong Ahafo from 2006 to 2010 and found a gigantic conversely relationship between non-performing credits (TDA) and natural banks' productivity (ROA).

The Non-Performance Loan Ratio (NPLR) was likewise remembered for the model to survey its impact on the business banks benefit (ROA). Credit to resource proportion measurably sway on the benefit of banks adversely. For example, with non-performing credits, at 5% noteworthiness level, a rate increment in non-performing advances (NPL) decreases performance (ROE) by 0.078. This implies the lower the Non-Performance Loan Ratio, the higher the productivity of the business banks.

This was as per the discoveries of Hosna et al. (2008) who pondered the association between non-performing credit and Leverage extents and advantage for four Swedish banks covering a period of 2000 to 2008. They found that pace of nonperforming credit and Total Debt to Total Net Asset extents was oppositely related to ROA anyway the degrees move starting with one bank then onto the next. Such opposite associations between advantage, execution and credit risk measures were moreover found in various examinations.

On size, there was a positive relationship between size and performance of selected commercial banks. Thus, when size of commercial banks, at 5% significance level, increased by a percentage, there is a corresponding increase in profitability (ROA) by 0.070. This relationship was statistically significant (p=0.050). This affirms the relationship found by Oppong (2015) that size of firm has a positive impact on firms' ROE and ROA.

In any case, this investigation discovered that there was just opposite connection among NPLR and ROA and not Size. Then again, this examination repudiates with that of Afriyie et al. (2011) who dissected the

impact of credit risk on the gainfulness of commonplace and system banks in the Brong Ahafo Region of Ghana. The assessment found that there was a huge positive association between non-performing credits and banks' profitability revealing that, there are higher loan loss.

**Table 7: Results of Panel Data Analysis on ROE**

| | Random Effect Model | | |
|---|---|---|---|
| Variables | Coef. | t-test | Prob. |
| (Constant) | 0.0736 | 1.58 | 0.061 |
| S | -0.0210 | 1.02 | 0.410 |
| TDA | 0.0045 | 0.27 | 0.125 |
| NPLR | -0.0021 | -1.60 | 0.062 |
| R-sq | 0.1226 | | |
| Wald Chi2 | 6.7 | | |
| Prob. | 0.1431 | | |

Source: Martin, (2020)

With regards to the Return on Asset (ROE), the adjusted $R^2$ is (0.123 or 12.3%). This indicates that the model is modest fit and shows that 12.3 percent of the variation in the dependent variable (ROE) can uniquely or jointly be explained by the independent variables (S, L and NPLR). The remaining 87.7% can be explained by other factors that are not in the model. The Wald-Chi2 (6.7) at p-value of 0.1431 explains the overall significance of the model. This indicates that there was no significance relationship between the dependent variable (ROE) and all the other independent variables (S, L and NPLR).

The results portray a positive and statistically insignificant relationship between Return on Asset (ROE) and Leverage Ratio (L). That is, from Table 7 when Leverage Ratio (L) increases by 1% Return on Asset (ROA) increase

by 0.002. The positive coefficient of the regressor, Leverage Ratio, indicate that when a firm has a greater Leverage Ratio, it influences its performance or profitability (ROE) and this may be a sign of good credit risk management practices in place, however, it was statistically insignificant. This affirms of Goddard et al. (2004) concentrate on the compelling variables of gainfulness of banks in Europe. They found a positive connection between L and bank performance.

The Non-Performance Loan Ratio (NPLR) was additionally remembered for the model to evaluate its impact on the business banks benefit (ROE). Credit to resource proportion measurably didn't affect on the productivity of banks decidedly. For example with non-performing credits, at 5% significant level, a rate increment in non-performing loans (NPL) diminishes performance (ROE) by - .0.0018 This implies the lower the Non-Performance Loan Ratio, the higher the benefit of the business banks. Be that as it may, this was factually unimportant. This was oppositely to the discoveries of AraHodna et al (2009) that NPLR has a huge impact than L on productivity (ROE).

# CHAPTER FIVE

# SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

## Introduction

In this chapter, the significant findings and the valuable information obtained or achieved by this study have been carefully summarized. The chapter is made up of the summary of the research, conclusion as well as recommendations drawn from this research study. Also, significant direction for further studies were given from the analysis of the available data in this study.

## Summary of the Study

The study sought to determine the effect of credit risk management on financial performance of commercial banks listed on the Ghana Stock Exchange. Specifically, the study seeks to;

1. What is the effect of the Leverage (Total Debt to Total Net Asset) on performance of commercial banks in Ghana?
2. What is the effect Non-Performing Loans Ratio on performance of commercial banks in Ghana?

The study employed the quantitative research approach and explanatory design of which the targeted all commercial banks listed on the Ghana Stock Exchange (GSE) for the period 2014– 2018. However, only 10 commercial banks with accurate information about their financial statements from 2014 to 2018 were considered in this study. The study employed the panel data analysis structured on the Ordinary Least Squares (OLS) regression method to examine the relationship between credit risk management and banks' performance. This was done with the aid of multiple

regression technique of the Statistics and Data software (STATA version 14.0).

**Major Findings**

The study found that there was a positive relationship between size and firm performance (ROA). Though this relationship was statistically not significant, size impacts positively on selected commercial banks in Ghana.

The results show that L is negatively related to commercial banks' performance (ROA). This means that L had inversely impacts on the financial performance (ROA) of listed commercial banks in Ghana. Thus, a unit increase in Leverage Ratio resulted in a negative change in the financial performance. However, this relationship was statistically not significant with regards to ROA. This means that customers have less interest in the commercial banks and therefore, were expected to deposit small money. This cause the commercial banks to be distress as indicated by the theory of distress. Baldwin and Scott (1983) purported that when a firm's business deteriorates to the point where it cannot meet its financial obligation, the firm is said to have entered the state of financial distress. This is a critical situation for listed commercial banks in Ghana.

Non-performing loan ratio is negatively related to commercial banks' performance (ROE and ROA). This means that NPLR had inversely impacts on the financial performance of listed commercial banks in Ghana. A unit increase in NPLR resulted in a greater negative change in the financial performance, thus, a greater NPLR reduces the financial performance of the commercial banks in Ghana. This relationship was statistically significant with Return on Asset (ROA). As indicated by the credit risk hypothesis, the risk is

fundamentally that of the loan specialist and incorporates lost head and premium, disturb misfortune might be finished or halfway and can emerge in various conditions, for example, an indebted bank unfit to return assets to an investor. To lessen the loan specialists chance, the bank may play out a credit mind the expected borrower, may require the borrower to take fitting insurance, for instance, contract assurance or search for security or affirmations of outcasts. At the point when everything is said in done, the higher the hazard, the higher will be the advance expense that the record holders will be drawn closer to pay on the commitment (Owojori, Akintoye and Adidu, 2011).

**Conclusion**

The purpose for the investigation was to decide the impact of credit risk management on financial related performance of business banks recorded on the Ghana Stock Exchange. Size (S), Leverage (Total Debt to Total Net Asset (L) and Non-Performance Loan Ratio (NPLR) were the independent factors and the reliant variable was Return on Asset (ROA). Leverage Ratio has negative relationship with the financial performance (ROA) of chose recorded business banks in Ghana. Besides, Non-Performance Loan Ratio (NPLR) has negative relationship with the financial performance (ROA) of recorded business banks in Ghana.

**Recommendations**

From the established findings of this study the following recommendations are put for consideration:

The Bank of Ghana should encourage Commercial banks to reduce their lending rates prudently and other fees and commission charge or even try to waive some charges on banking services.

Commercial banks should boast the confidence of their customers to deposit more by keeping adequate liquidity, capital levels and quality assets on their books.

Due to the negative relationship between Non-Performing Loans Ratio (NPLR) on performance, commercial banks should be critical in given out loans and how they are retrieved on time.

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