

UNIVERSITY OF GHANA

BANK-SPECIFIC RISKS AND PERFORMANCE OF UNIVERSAL BANKS IN GHANA.

BY

ALBERT KWAKU BOATENG

(10636891)

**A LONG ESSAY SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON IN
PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER
OF BUSINESS ADMINISTRATION DEGREE (FINANCE OPTION)**

JULY 2019

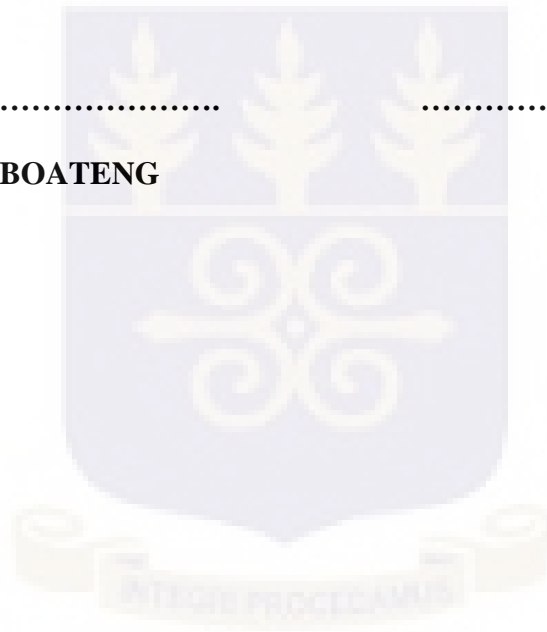
DECLARATION

I, Albert Kwaku Boateng, do hereby declare that this work is the result of my own research and has not been presented by anyone for any academic award in this or any other University. All references used in the work have been fully acknowledged.

.....
ALBERT KWAKU BOATENG

(10636891)

.....
DATE



CERTIFICATION

I hereby certify that this thesis was supervised in accordance with procedures laid down by the University.

.....
DR VERA FIADOR
(SUPERVISOR)

.....
DATE



DEDICATION

I dedicate this study first and foremost to the Almighty God for giving the human being a powerful brain capable of achieving great feats that add value to society. Secondly, to my family, who have always believed in me and given me the greatest support.



ACKNOWLEDGEMENT

I would like to express my heartfelt appreciation to my supervisor, Dr Vera Fiador who has been of immense help during the past year. I am truly grateful for her counsel and encouragement.

I would also like to acknowledge Mr Elijah Benson and Mr Divine Allotey for their support with securing data for this research work. The words of encouragement and support received from Mr Eric Tetteh proved valuable.

May the good Lord bless you all.

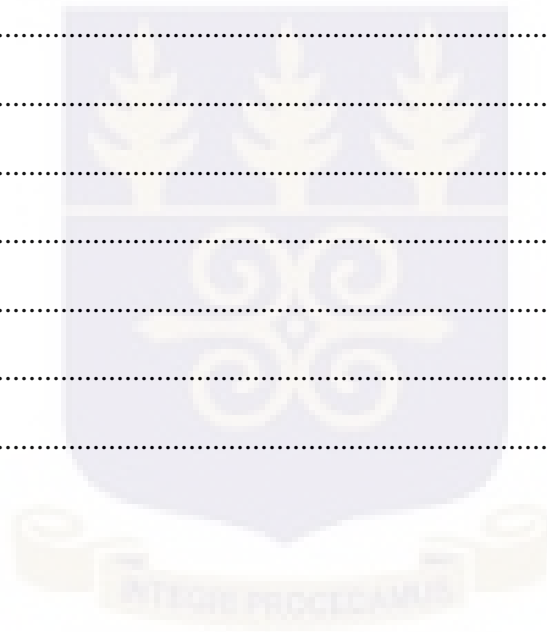


TABLE OF CONTENTS

DECLARATION	i
CERTIFICATION	ii
DEDICATION	iii
ACKNOWLEDGEMENT	iv
TABLE OF CONTENTS.....	v
LIST OF TABLES	viii
LIST OF FIGURES	ix
LIST OF ABBREVIATIONS.....	x
ABSTRACT.....	xi
CHAPTER ONE	1
INTRODUCTION	1
1.1 Background of the Study.....	1
1.2 Problem Statement	2
1.3 Research Objectives	4
1.4 Significance of the Study	5
1.5 Summary of the Proposed Methodology.....	6
1.6 Scope and Limitation of Work.....	6
1.7 Organization of Work.....	7
CHAPTER TWO	9
LITERATURE REVIEW	9
2.1 Introduction.....	9
2.2 Theoretical Literature.....	9
2.2.1 The Banking Industry within an Economy.....	9

2.2.2 Theories on Bank Performance	12
2.2.3 Measurement of Bank Performance	14
2.2.4 The Concept of Risk Management	15
2.2.5 Theories on Bank-Specific Risks	16
2.2.6 Measurement of Bank-Specific Risks	17
2.3 Empirical Literature	20
CHAPTER THREE	27
METHODOLOGY	27
3.1 Introduction	27
3.2 Study Approach.....	27
3.3 Study Design	27
3.4 Data	28
3.5 Sample Size	28
3.6 Specification of the Empirical Model	29
3.7 Variable Definition and Measurement	30
3.7.1 Dependent Variables.....	30
3.7.2 Independent Variables	30
3.8 Method of Data Analysis	32
CHAPTER FOUR.....	33
ANALYSIS OF RESULTS	33
4.1 Introduction	33
4.2 Descriptive Statistics.....	33
4.3 Banking Data Trends Analysis.....	35
4.4 Bank-Specific Risk Dynamics	37
4.5 Final Specified Model.....	40

4.6 Results and Discussion.....	40
CHAPTER FIVE	47
CONCLUSION & RECOMMENDATION	47
5.1 Introduction.....	47
5.2 Summary of Major Findings	47
5.3 Conclusion.....	48
5.4 Recommendations	49
5.5 Implications for Further Research.....	50
REFERENCES	52
APPENDIX I	58
APPENDIX II.....	59
APPENDIX III.....	62
APPENDIX IV.....	63
APPENDIX V	64
APPENDIX VI.....	65



LIST OF TABLES

Table 2.2: Bank-specific Risk Measures	20
Table 4.1: Summary Statistics of Variables for Empirical Analysis	34
Table 4.2: Correlation Matrix	38
Table 4.3: Variance Inflation Factors for Independent Variables.....	39
Table 4.4: Hausman Test Results (Fixed versus Random Effects model).....	41
Table 4.5: Random Effects Model Regression Results	42



LIST OF FIGURES

Figure 1.1: Economic Relevance of the Banking System.....	2
Figure 4.1: Histograms of Profitability Measures.....	35
Figure 4.2: Profitability of Universal Banks in Ghana (2009 – 2018).....	36
Figure 4.3: Trends in Specific Risk Exposures of Universal Banks in Ghana (2009 – 2018).....	36



LIST OF ABBREVIATIONS

BOG	Bank Of Ghana
BS	Bank Size (Natural Log of Total Asset)
CAMELS	Capital Adequacy, Asset Quality, Management, Earnings, Liquidity and Sensitivity.
CAP	Capitalization
CDR	Cash & Equivalent to Deposits Ratio
CIR	Operational Cost to Income Ratio
CLR	Credit Risk Reserve to Loans ratio
ECOWAS	Economic Community Of West African States
FGR	Financing Gap Ratio
LAR	Loans to Asset Ratio
LV	Leverage
NIM	Net Interest Margin
ROA	Return on Assets
ROE	Return on Equity
TLD	Total Liabilities to Deposits Ratio

ABSTRACT

The respective impact of the factors that drive bank profitability has been a great source of debate within academia and the banking industry. The objective of this empirical work is to fill the knowledge gap by assessing the impact of selected bank-specific risks on financial performance within the local context of a developing country. The study examined into details the trends in bank-specific risks and examines the effects of these idiosyncratic factors on bank performance in Ghana. Factors investigated as part of this study were categorized into Risk and Non-risk factors. The study focused on three bank-specific risks; Credit, Liquidity and Operational exposures.

To probe the hypothesized adverse effects of bank-specific risks, a holistic analysis was performed using a panel dataset of sixteen (16) universal banks in Ghana with secondary financial data collected for a ten-year period (2009 – 2018). A random effects model was estimated with further analysis conducted using summary statistics and a correlation matrix. The findings demonstrate that operational risk, bank size and capitalization significantly influence the financial performance of banks. Directionally, liquidity risk has a positive effect on performance as well as a strong, positive association with credit exposures of a bank. Practical implications of the findings include the formulation of strategies to jointly mitigate credit and liquidity risk and implementation of robust event reporting systems to manage operational risks by banks.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The last two decades have been a period of major change for the Ghanaian banking system; characterized by the universal banking principle as part of the enactment of the Banking Act 673. With the diverse set of services that these banks can provide due to this enactment, banks have assumed an even more important position within the Ghanaian economy. In general, banks play a key role regarding economic activity within a country and economies around the world depend on efficiently operating systems of money and credit (Omankhanlen, 2012). Banks are vital in the global economy by performing various functions to aid intra-national and international transactions as well as capital formation. Contemporary banking systems provide valuable services to a country and achievement of economic development is predicated on the existence of a robust financial system to provide both economic and societal benefits (Bandlamudi & Taidala, 2017).

Banks are at the centre of this system of money because of their resource allocation function. In this role, banks move funds from surplus units, also known as depositors, to borrowers who are deficit units. This intermediation function that banks play is very important when it comes to spurring economic activity because they provide easy access to capital (Bandlamudi & Taidala, 2017). As a result, entities looking to engage in investment activities do not spend a lot of time and energy finding the required funds. The highly crucial intermediation function is very dependent on how well a bank is performing and requires profitability (Ongore & Kusa, 2013).

A profitable bank provides value to its shareholders, incentivizing the existing shareholders to increase their investment in the bank and attracting prospective investors to invest. This increases the bank's ability to offer more loans and expand on its credit activities. This dynamic is observed in the Ghanaian economy when recently the capital requirement for universal banks was increased to Four Hundred million Ghana Cedis (GHS 400 million) as part of a central bank's initiative to strengthen the banking institutions under its supervision.

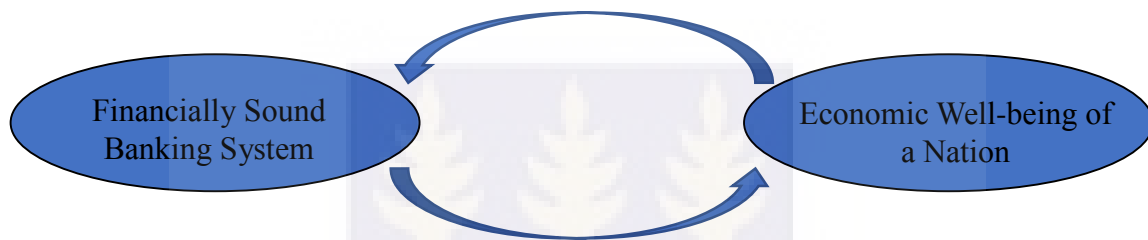


Figure 1.1: Economic Relevance of the Banking System

It is therefore clear that the good performance of banks is of the utmost importance in any economy. Additionally, within an economy where the main constituents of the financial sector are banks, the role that these banks play is even more crucial since they are the main actors in the process of making credit available to citizens and businesses (Antoun et al., 2018). In acknowledgement of the pivotal function of banks in the Ghanaian economy as financial intermediaries and drivers of liquidity creation, great strides in both academia and the industry need to be made to reduce fragility and promote sustainable banking operations.

1.2 Problem Statement

In times of financial crisis, stakeholders are reminded of the importance of the financial system, specifically the banking industry, to the overall economy (Ghenimi et al, 2017). The failure of a few homegrown banks in 2017 which included Capital Bank, left in its wake discussions within

the industry, as to what possible conditions may have triggered the poor performance and subsequent failure of the local banks. Profitability is employed as the yardstick to quantify performance in this research work and will be a key metric as the topic is probed further for insights. Throughout the literature, there are different positions on what drives a bank's financial performance; idiosyncratic (internal) factors or systemic (external) factors. On the external side of the debate, researchers believe certain systemic factors outside the control of a bank are what determine how a bank performs. One of these research works, authored by Havrylchuk & Jurzyk, stresses the importance of external factors on bank performance. Their work highlights the impact of domestic economic conditions on profitability. Banks will always be subject to prevailing conditions within the system they operate in and even in foreign economies in the case of international banking institutions (Havrylchuk & Jurzyk, 2011). Systematic factors including interest rates, inflation, liberalization levels and exchange rates have diverse effects on a bank's performance but are great contributors.

Other scholars argue that the degree to which these systemic elements affect performance is dependent on bank-specific (internal) conditions within the institution. This forms part of the argument for bank-specific factors and the proponents of this school of thought believe that these idiosyncratic factors influence the performance of banks. Ongore and Kusa (2013), who performed a similar study in Kenya, demonstrated that the idiosyncratic factors including bank-specific risks have a greater bearing on performance. They concluded that systemic factors do not explain the differences between the performance of banks since these are factors that affect all banks within the economy (Ongore & Kusa, 2013). On the topic of risks, bank-specific risks include: Credit risk, Liquidity risk, Reputational risk and Operational risk. Research shows that ineffective risk management activities are evident in banking failures, takeovers and lower profit

margins (Allen, 2013). Therefore, it is key to look at the nature of these risks, the varying exposures to these risks across banks and the contribution of these factors to performance.

Studies carried out on this topic have mainly focused on general drivers of financial performance, determining metrics for measuring risks as well as isolated investigations of specific risks on profitability. The insufficiency of research works that study the effect of idiosyncratic risks on banking operations in Ghana as well as explore relationships between different types of bank-specific risks, establishes the need for further research attention in this area. The objective of this empirical study is to fill the knowledge gap by understanding the local context and undertaking a holistic assessment of the impact of select bank-specific risks on financial performance within the context of universal banks in Ghana. This research work also seeks to explore whether the theorized relationship between liquidity risk and credit risk prevail in the Ghanaian market as well as to investigate if there are reciprocal relationships that exist between other types of specific risks. An effective assessment of the bank-specific risks of universal banks can improve profits by reducing operational and other exposures of banks in Ghana (Agbada & Osuji, 2013).

1.3 Research Objectives

The overarching aim of this investigation is to assess bank-specific risk levels and examine their overall influence on the performance of banks in the Ghanaian market. Specifically, the research work seeks:

- I. To evaluate the trends in bank-specific risks that banks in Ghana have been exposed to over the study period.

- II. To assess the relationships between the identified set of bank-specific exposures including credit and operational risk.
- III. To study the influence of credit risk, operational risk and liquidity risk on the performance of universal banks in Ghana.

1.4 Significance of the Study

The significance of this study can be assessed by the contributions that would be made to academia, practice, and policy. These points are explored in the following paragraphs:

- i. As outlined in the introductory statements, the research work addressed the topic with regard to the universal banks in Ghana. By virtue of this, it enhances the present literature on the impact of risk by carrying out research that assesses the relationship between various types of bank-specific risk and the performance of universal banks in Ghana. This is critical because the study was undertaken in a developing African economy with a focus on bank-specific risk dynamics. The study sheds light on the issue within the local context and provides a store of knowledge on the topic.
- ii. An assessment of the operational, liquidity and credit risks from this work provides industry insights that are directly relevant to banks in the market. Outcomes of this study cast light on whether the practices to manage enterprise-wide exposures instituted by various banking establishments in the Ghanaian sector have contributed to the bottom-line of the businesses. This could be the difference between the survival and failure of a universal bank within the market and may prevent large losses that could cripple Ghanaian banks.
- iii. The regulator (Bank of Ghana) could use findings of this research to rework and improve on the existing framework for managing exposures of universal banks in Ghana. The

research also reveals the highly correlated bank-specific risks which will inform risk management practices within the sector. This could include guidance for reviewing the threshold for these idiosyncratic risks and other proactive measures to help leaders of universal banks in Ghana effectively deal with these risks to promote the growth of the industry.

1.5 Summary of the Proposed Methodology

The quantitative research approach was adopted in the investigation to assess the levels of bank-specific risks, as well as to examine their overall effect on the performance of universal banks. This approach was adopted because the study primarily employed the secondary data sources of the sampled universal banks in Ghana. This comprised of the profit and loss statement, the balance sheet as well as the cash flow statements of the selected institutions. Data from the yearly financial reports of the specified universal banks as at the end of December 2018 were acquired from the sampled banks and Ghana Stock Exchange. The secondary data sources span a period of ten years (2009 to 2018). The time period selected was to ensure a robust set of data points were used for this research and represented a period of major changes for the Ghanaian banking system driven by the enactment of the Banking Act 673 as well as the Global and Local financial crises. The data collected was then summarized and analyzed statistically using both correlational analysis and multiple regression analysis, to establish the impact of the risks on bank performance. The results from the regression analysis were secured using R Statistical software.

1.6 Scope and Limitation of Work

The research work was restricted to institutions providing banking services in the Ghanaian

market, as at the end of December 2018. Undertaking this study with Ghanaian banks improved the ease of access to the relevant secondary data and provided locally relevant results. The relevant data were collected from financial statements of public and private banks in Ghana for a ten-year period (2009 to 2018). The chosen study period allowed for the use of a substantial amount of data in the empirical analysis. This study period allowed for the performance of a holistic analysis of the impact of bank-specific risks in the post-financial crisis era. Contextually, the study was limited to an assessment of bank-specific risks and their effect on the profitability of Ghanaian universal banks. To achieve the stipulated objectives, the key components of the bank-specific risk variables of universal banks, mainly credit risk, liquidity risk and operational exposures were assessed in relation to the financial performance of the universal banks.

1.7 Organization of Work

The report for this investigation was structured to have five main chapters as outlined in this section. The first chapter presents an overview of the research with subchapters including the Background, Problem Statement and Significance of Study. In addition, this chapter covered the Scope and Organization of the Work. The second chapter of this study is an exhaustive review of pertinent works on the chosen topic. The chapter discusses existing literature on the relevant theoretical and empirical works on bank-specific risks as well as their respective impact on the profitability of banking institutions and the inter-relationships among the various types of risks. The third chapter presents the methodology applied in the study. The chapter provides further details on; the Research design, Sampling, Data types and Mode of data gathering. The statistical tools and techniques to be employed in this research work are described as part of this chapter.

The fourth chapter outlines the outcomes of the study and the relevant discussions of findings. The relevant data collected from the sources such as the Ghana Stock Exchange is summarized in tables and appropriate charts to enable review. The chapter further engages in a comparative analysis of the study results in relation to the conclusions in previous works examined in chapter two. The fifth chapter, which is the final section of the work, draws conclusions based on the outcomes of the research work. This involves summarizing the major outcomes of the study and making relevant recommendations. In this chapter, study limitations are also reviewed to produce constructive suggestions for further academic research on this topic.



CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This section of the study brings to bear the information from existing research works on the topic of bank-specific risks. Therefore, the chapter provides an analysis of prior related studies and does this by focusing on the theoretical reflections of the problem under investigation and reviews the outcomes of the empirical literature regarding bank-specific risks and their influence on performance.

2.2 Theoretical Literature

Different theories have been propounded to explain the relationship existing between idiosyncratic risks and the financial performance of banks. Their intention is to offer a framework for understanding, not just the factors underlying the incidence of bank-specific risks, but most importantly, how an effective risk management framework can ultimately translate to a robust overall performance of a universal bank (Agbada & Osuiji, 2013). The theoretical principles and concepts underlying the study include the Dominant Theories of Banking, the Modigliani-Miller proposition, Theories on Bank Performance and the Risk Management theory.

2.2.1 The Banking Industry within an Economy

Throughout the literature, several theories have been proposed to explain the concept of money; where it comes from and the key role that banks play in facilitating the process of generating money supply within the economy. The following paragraphs under section 2.2.1 consider the three main theories of banking and demonstrate how these theories elicit the importance of banks

in enabling economic activity. Central to these theories is the view of banks as financial intermediaries.

I. Credit Creation Theory of Banking

This theory, unlike the others discussed in subsequent paragraphs, is not popular in academic and contemporary banking discussions as well as regulation. The theory holds that banks can create money or credit on their own each time they write loans and do not need collective activities in the industry to perform this function (Werner, 2016). Two main factors determine a bank's ability to create new money on its own. These include acting as the 'accountant of record' within the financial system and banks being exempt from the 'client money rules' (Werner, 2014). This differentiates banks from non-bank institutions and further strengthens the unique role that banks play in the economy.

Proposing that all aspects of banking - accounting, legal and financial, be considered together when discussing the banking industry, Macleod (1856) holds the view that it is misleading to view banks as facilitating financial activity by just borrowing from one set of units and providing funds to another set of units within the economy. This demonstrates that banks do not need to collect deposits before they can engage in lending activities especially when transactions are cashless. However, one must wonder how applicable this notion is to the Ghanaian economy where transactions are largely cash-based. Regardless of the context, this theory showcases a function that banks can play and how their activities impact the value within an economy.

II. Fractional Reserve Theory of Banking

Unlike the Intermediation theory, the Credit Creation theory looks at banks from an industry perspective and the collective impact of these institutions. For supporters of this theory, the banking industry can create credit or money through Multiple Deposit Expansion also referred to as the Money Multiplier (Werner, 2016). The idea of the multiplier is prevalent in the economic literature on the dynamics of the macroeconomy especially when it comes to fiscal spending. This concept of the multiplier can also be observed in the banking industry under the fractional reserve theory. In the banking sector, this money multiplier results from the collective deposit creation and lending activities of banks. According to Samuelson Nordhaus (1995), the banking industry as a whole is able to operate in an area (money creation) where individual banks are limited since they can only lend out funds depositors have saved.

Essentially, since banks can lend money to each other, an initial amount deposited in one bank will multiply as a fraction of this amount as it is continuously lent out by one bank to the other creating multiple deposits with a larger total value. The money creation through the process of deposit expansion occurs to the extent of the reserve ratio required by central banks (Werner, 2016). In the past, this theory has served as the basis for the regulation of banks through the legal enforcement of minimum reserve requirements for banks. Underlying the fractional reserve theory is the banking industry's ability to increase money supply which could have expansionary effects on the economy further highlighting the importance of banks.

III. Financial Intermediation Theory of Banking

This theory of intermediation is the current and most dominant theory on banking and considers these institutions as intermediaries which accrue deposits and lend these funds out to parties in need. The theory is developed on the idea that these institutions lower informational asymmetries regarding available funds as well as costs involved in transactions presenting the intermediation function of banks as a process that creates economic value (Werner, 2016). The theory supports the economic importance of banks and their pivotal role in the global economy. Many notable economists including Keynes (1936) are proponents of the financial intermediation theory and believe that in order for investments to be possible in an economy, savings must be gathered first signifying the importance of banks.

However, scholars including Scholtens & Van Wensveen (2003) posit that the importance of this intermediation process and its value creation benefits are undermined when prevailing conditions demonstrate that information lop-sidedness is not the driving force behind intermediation activities. Furthermore, the intermediation theory presents banks as not differentiated from other non-bank financial establishments which further undermines the relevance of banks and gives rise to other theories of banking. However, in economies such as Ghana where banks are the main institutions in the financial sector this differentiation is not too detrimental to the pivotal role of banks as they are the major facilitators of the transfer of funds from surplus units to deficit units.

2.2.2 Theories on Bank Performance

Great attention is devoted by economic literature to appreciate the underpinnings of performance of banks with consideration for many aspects of performance including efficiency and

profitability. These theories include the Economies of Scale Theory and Efficient Structure Theory. The following paragraphs elaborate on these two theories that were propounded regarding performance.

Efficient-Structure Theory

Whereas earlier theories consider market structure as a determinant of performance, the Efficient-Structure theory considers the efficiency of the banking institution in explaining performance. The underlying idea for this theory is a bank's ability to ensure lower costs (Berger, 1995). Efficient banks that operate with state-of-the-art technologies will be able to ensure lower costs and therefore perform better. Within the Efficiency school of thought, there are two hypotheses which look at structure(X-Efficiency) and scale(S-Efficiency) respectively (Berger, 1995). On one hand, the structure perspective believes the quality of management and technology is a driver of profitability, while on the other hand proponents of the scale argument believe it is the scale of efficiency that explains bank profitability. According to Berger (1995), this theory was propounded following the criticisms of the earlier Structure-Conduct-Performance theory.

Economies of Scale Theory

Another theory that explains bank performance is the Economies of Scale theory. Central to this theory of bank performance is the bank size as a driver of profitability. A large bank as measured by the value of its assets will enjoy economies of scale that will allow it to lower costs and therefore enjoy higher profits. The extent to which a bank enjoys this advantage will be the size of its assets relative to that of competitors in the industry. However, the theory does not capture

the associated risks that accompany the operation of a large institution with various moving parts and variables which could significantly impact performance (McAllister & McManus, 1993). Aligned with this is the work of Boyd and Runkle (1993) which finds limited support for the effect of the size of banks on their performance. Essentially the researchers hold the claim that the idea of ‘Too big to fail’ is a myth in the context of banking and this is evident in the great recession which saw some banking titans fail.

2.2.3 Measurement of Bank Performance

Substantial performance of banks is important to their customers and the entire economy as demonstrated in the literature outlined in previous sections. Performance can be viewed in terms of profitability, competitiveness, concentration (market share) and efficiency (Bikker & Bos, 2008). Irrespective of how stakeholders elect to give it consideration within academia or practice, the performance of a bank needs to be captured in measurements or metrics that can be easily communicated and appreciated by stakeholders. For the purpose of this study, the investigation is conducted by modelling performance in terms of profitability. Therefore, metrics that capture or indicate profitability will be considered for this study. Profitability is captured in both level and ratio measurements. Ratio measures have an advantage in empirical work as they allow for comparisons since they are controlled for the distortionary effect of price level changes (Rasiah, 2010).

A diverse set of measures are used for capturing the profitability of banks in both academia and practice. These measures include Net Interest Margin (NIM), Return on Capital (ROE), Return on Assets (ROA) and Return on Deposits (ROD) (Bikker, 2010). Bikker (2010) focuses on performance in a comprehensive sense and acknowledges that certain aspects of a bank’s

performance cannot be captured in these ratios or observed directly even though they possess economic value for the firm. One aspect of performance that falls within this category is competition, and therefore it needs to be measured indirectly through proxies. Competition is of the utmost importance and creates economic value by driving innovation (Bikker, 2010). The performance metrics (ROA, ROE and NIM) was employed in this research work as performance measures. This will help identify if the impact of bank-specific risks varies with the performance indicator or measure being used.

2.2.4 The Concept of Risk Management

Chance and Brooks (2011) describe risk as “a measure of the timing and magnitude of unanticipated changes, which is evaluated relative to expected changes in variables”. Management of risk forms the basis of prudent management practices for firms (Dar, 2012). The objective of every organization is to achieve an optimum risk-reward trade-off and instituting a well-structured risk management framework helps the implementation of this objective. The risk management framework defines a clear and consistent set of tools for identification, documentation, monitoring, and the mitigation of significant risks to which the firm is exposed (Dar, 2012). According to Allen (2013), there are risks that are related to the differences in firm earnings caused by aspects that are exclusive to the company, including the type of assets the business possesses on its balance sheet and the product that it sells. These are classified as unsystematic risks and diversification can be employed to mitigate their impact.

The concept of Enterprise risk management is a modern approach to managing a company’s exposures. Gordon et al. (2009) consider ERM as a holistic approach to dealing with an organization’s exposure to uncertainty emphasizing the identification and mitigation of the issues

that could potentially detract from the achievement of outlined organizational objectives. This approach enables the firm to effectively control the two key pressures faced by a business; the accountability to shareholders for the delivery of maximum value and the risk related to business activities.

2.2.5 Theories on Bank-Specific Risks

The Modigliani-Miller Proposition

The propositions made by Modigliani and Miller theorize that provided perfect conditions prevail, financing decisions have no impact on shareholder value and by extension are irrelevant (Modigliani and Miller, 1958). Increasing shareholders' wealth can be achieved by ensuring the firm's assets appreciate. Risk management through capital structure decisions does not directly impact shareholder's wealth. This theory is established on unrealistic assumptions and some deviations away from perfect market conditions in the Modigliani and Miller (1958) scenario have incentivized firms to pay attention to issues of risk and associated costs including taxes and bankruptcy costs (Gossy, 2008). Many scholars argue that these costs have great implications for the profitability of a financial institution and must be managed, contrary to the propositions of Modigliani and Miller. It is therefore imperative to measure the bearing of these exposures on profitability within the local market.

The Modern Portfolio Theory

As a theory of investment, the Modern Portfolio Theory prescribes the approach to maximizing return and protecting against risk through strategic asset diversification (Markowitz, 1952). As an example, price risk can be mitigated with a combination of stocks and bonds since as prices in

the stock market fall are very likely to move in the opposite direction of bond market prices. An optimal combination of these asset classes can be used to effectively reduce risk exposure as compared to a homogenous portfolio (Mandelbrot & Hudson, 2004). The unpredictable movement of asset prices sets the foundation for the Modern Portfolio Theory (MPT) with the understanding that the path taken by prices is a function of the long-run nominal appreciation of earnings per share allowing for random fluctuations (Mandelbrot & Hudson, 2004). Therefore, universal banks are exposed to certain risks and to varying extents based on the assets that they possess and invest in.

The Cost and Revenue Efficiency Theory

Strongly related to the Enterprise Risk Management theory is the Cost and Revenue Efficiency Theory. According to Grace et al (2010), the 'Cost and Revenue Efficiency Theory' postulates that cost efficiency is a strategy of operating with minimum required costs to yield a specified level of results while revenue efficiency compares the income of a firm to the revenue of an effective or highly productive firm. The theory proves useful in the measurement of performance of organizations. Grace et al. (2010) further explained that the efficiency theory is the firm's ability to mobilize its resources for productivity. Financial institutions with robust risk management practices and relatively low levels of bank-specific risks will be able to achieve the desired cost efficiency.

2.2.6 Measurement of Bank-Specific Risks

Though there are a plethora of risks faced by universal banks in Ghana, this research specifically focused on three main bank-specific risks namely liquidity risk, credit risk and operational risk. Liquidity risk, which is also known as funding risk or cash-flow risk is the risk associated with a

bank's inability or limitation in realizing resources or otherwise raising resources to honour obligations associated with financial instruments (Allen, 2013). The risk associated with a borrower not paying a loan which may result in the lender losing the loan's principal and/or interest is referred to as Credit risk. At its core, Operational risk refers to the failure in the internal processes, procedures, people and systems within the banking institution (Basel Committee on Banking Supervision, 2003).

Various measures have been proposed to capture the levels of the risks and regulators make use of these measures to assess banks' adherence to risk management requirements in their banking activities. A bank's credit activity is a significant driver of performance and value created for shareholders (Kargi, 2011). However, providing credit to investors expose a bank to credit risk since there is a possibility of borrowers defaulting on funds made available to them through a credit facility extended to them. The recognition of how this risk affects asset quality has required banks to engage in strict credit risk mitigation practices and the following. Notable measures of credit risk are Impairments to Loan ratio, Non-Performing Loans to Total Loans ratio, Credit Risk Reserves to Total Loan ratio and Total Loans to Total Deposit Ratio.

The intermediation function of banks necessitates that these financial institutions maintain a level of liquidity to meet their obligations (Lartey et al, 2013). The importance of liquidity for banks is much higher compared to non-bank financial institutions because the differing maturity of liabilities that sit on the balance sheets of the two types of financial institutions. Maintaining a good balance between the pursuit of profits and the capacity to fulfil obligations is a dynamic that banks across the globe must grapple with. Investments which generate proceeds in addition to interest from loans for banks can lock up funds depending on the relative maturity of

obligations(deposits), exposing them to liquidity risk. The extent of exposure depends on the relative ability to meet existing needs and this is captured in measures such as the Financing Gap Ratio which is the ratio of interest-sensitive assets to interest-sensitive liabilities, Loans to Assets ratio and Cash Reserves to Total Deposits. Some researchers use accepted liquidity measures as proxies for liquidity risk and in their interpretation, view liquidity and liquidity risk as having an inverse relationship as one would intuitively expect.

Operational risk, unlike credit risk, is not unique to the banking industry or financial firms in general. Banking risks, specifically operational risks, have been on the rise alongside the scaling of banks across the globe (Haneef et al, 2010). Per the Basel Committee (2003), Operational risk describes the exposure of a bank to losses that are produced by insufficient internal processes, people, and systems. Scholars believe that operational risk, in addition to its potential impact on profitability, can reinforce other risks if not curbed (Mittelstaedt, 2005). This threatens the stability of a financial institution and indicates the necessity of further investigating the correlation that exists between the various bank-specific risks. In the literature, Operational Expense to Income ratio is widely used to capture Operational risk. Other non-traditional measures include Budget Variance (Actuals to Budget value ratio) and Value of Targets not met.

Measures used to capture the three types of bank-specific risks across the literature are summarized in Table 2.2 below:

Table 2.2: Bank-specific Risk Measures

Risk Type	Risk Measure	Reference Literature
Credit	Non-Performing Loans to Total Loans ratio	Saeed & Zahid, 2016, Kargi, 2011
	Impairments to Total Loans ratio	Saeed & Zahid, 2016
	Total Loans to Deposits ratio	Kargi, 2011
	Loan Loss Provision - Total Loans ratio	Tan 2016
Liquidity	Loans to Total Assets ratio	Tan 2016
	Cash & Cash Equivalents to Total Deposits ratio	PWC 2009
	Financing Gap ratio	Awojobi et al 2011
Operational Risk	Operational Expense to Operation Income ratio	Muriithi & Muigai 2017

The above measures are all subject to the consistent reporting of the constituting financial information which unfortunately banks in Ghana are significantly lacking in that space. For the impact analysis, appropriate measures were selected from the measures outlined in the paragraphs above in addition to Bank size and Capitalization as control regressors.

2.3 Empirical Literature

Considering the pivotal role that banks play in the economy and crucial good performance is for the fulfilment of this role, many research works have been devoted to understanding the determinants of bank performance and how they explain differences between banks. In their work, Staikouras and Wood (2004) consider various determinants of bank performance. The researchers categorize these determinants into internal, also referred to as within effects in their paper, and external factors. The work was undertaken in the context of the wave of changes the European banking markets were undergoing in that period (Staikouras and Wood, 2004). The researchers estimated a linear multiple regression function, on a pooled sample to investigate the

effects of firm and market-specific variables on bank performance specifically profitability. The study results point to the fact that bank performance is heavily driven by management decisions as well as macroeconomic changes external to the bank. The research found Equity to Assets ratio and Financing Gap ratio to have significantly positive profit contribution while Loans to Assets ratio and the Loan Loss Provision to Total loans ratio had the reverse effect.

An investigation on the driving factors of performance of institutions was carried out by Petria et al. (2015) on twenty-seven European banking systems. The work sought to find the vital factors of banks' profitability in Europe over a seven-year period (2004-2011). The researchers, in a similar fashion to Staikouras and Wood (2004), divide relevant factors into bank-specific factors and drivers that are external to the bank. In their study, profitability is captured by average values of ROA and ROE, producing results consistent with the existing theories of banking. The empirical study evaluates factors such as credit and liquidity risk, management efficiency, competition and economic growth. A more recent work by Coskun and Georgevski (2018) aim to investigate determinants of Central and Eastern European bank profitability, categorizing these determinants into bank-specific, industry-specific and macroeconomic determinants.

For their study, the researchers deviated from previous works by constructing an economic performance index grounded on CAMELS ratios. This index was then used as the predicted variable for analysis using panel data. The researchers appraised the effect of idiosyncratic, industry-specific, and systematic factors on two performance dimensions; Asset quality and earnings and Capital adequacy and liquidity. Their outcomes demonstrate that the scale of operation of a bank adversely affects performance while other factors including industry

concentration have a positive impact on performance (Coskun and Georgevski, 2018). Both works shed light on relevant determinants of bank performance for empirical analysis.

Acknowledging the relatively limited quantity of empirical studies on idiosyncratic exposures and profitability in Ghana, works from other parts of the globe needed to be referenced to provide direction for this study. Researchers across the globe continue to uncover varied findings on this relationship. The following are some of the empirical studies that have explored this relationship. Throughout the literature, it is apparent that credit risk is of great importance to researchers and industry practitioners, considering the fact that there is a plethora of research work conducted on the exact bank-specific risk. Ahmad and Ariff (2007), in their work first attempt to understand the factors that contribute to credit exposures of banks in their financing and intermediary activities. The researchers look at these determinants of credit exposures in the context of emerging economies which makes the work relevant for the Ghanaian universal banks. The outcome of the investigation demonstrates that regulatory capital and management quality are significantly associated with credit exposures of any banking system. Contrary to the stipulations by existing theory, leverage does significantly contribute to credit exposures directly. Further studies, with the understanding of what drives credit risk, then build on this work to investigate how the credit exposures of banks impact their performance.

One of such works was conducted by Saeed and Zahid (2016). Their work explores the relationship with regards to commercial banks in the United Kingdom. The researchers use traditional measures, Return on Assets and Return on Equity to denote profitability as their dependent variable in their models of interest. Working with bank data from 2007 to 2015, the outcomes of their research show that profitability is significantly impacted by credit risk in a

positive direction. Saeed and Zahid interpret this dynamic as the banks in the UK effectively managing credit risks at levels that allow them to derive benefits interest-earning activities. The researchers also find that regulatory capital is significant for the profitability of banks while leverage shows no significant effect, a result that is inconsistent with theory.

Kolapo et. al (2012) conducted a study within the sub-region whose findings can be considered as relevant for the Ghanaian industry. The research work was an empirical study to quantify the impact of credit exposures on the performance of commercial banks in Nigeria. The panel data used in the work span over an eleven-year period (2000-2010) and allowed for robust conclusions to be drawn about banking institutions in the Nigerian economy. The researchers used the following ratios to capture credit risk of Nigerian commercial banks; Non-performing loans to Loan and advances ratio and Loans to Total deposit ratio (Kolapo et. al, 2012). Their results demonstrated that the influence of credit risk on performance does not vary across banks. The credit risk indicators all move in the opposite direction as profitability. Therefore, for banks to ensure sustained growth of their bottom line, they must mitigate credit risk exposures in their operation. The work recommends that Nigerian banking institutions engage in efforts to scale up their capacity in credit appraisal as part of their loan provision activities and with the central bank ensuring adherence to provision guidelines (Kolapo et. al, 2012). However, the researchers acknowledge that the methodology employed is limited in explaining the differing effects experienced across banks.

In a study conducted by Asare-Bekoe (2010), it was established that there is a positive relationship between lending rate, credit risk, and loan default. The empirical work covered three public banks spanning a ten-year period (2000 - 2009). The findings from this study were that,

loan default experienced major fluctuations during that period; rising between 2000 and 2001, falling gradually between 2002 – 2006 and then rising thereafter. The result from the findings showed that the average loan default in the 3 banks progressed negatively over the period of the study. Their study established that the fluctuations in loan defaults were contributed by the lending rate charged by the banks, macroeconomic factors such as exchange rate, weak bank-specific mechanisms for monitoring loans and the strength of the bank's recovery system. The research concluded by stating that, when the lending rate increases by one percent, at any point in time, loan default increases by seventeen percent.

Hakim and Neamie (2011) examined the risk-performance connection using rural banks in Egypt and Lebanon. The study makes use of data from rural banks in two different nations spanning the period 1993-1999 to estimate the influence of a diverse set of factors on bank return. The conclusions that are drawn from the study demonstrate a positive relationship between the credit risk and profitability, as well as the insignificance of the liquidity variable on the profitability of rural banks (Hakim and Neamie, 2011). For policymakers and regulators, the study offers insights for setting appropriate success measure and providing adequate guidelines for the management of risks by bank executives across their respective institutions. The study further contributes in terms of how banks can effectively utilize available capital and measure their organizational performance.

Boahene et al. (2012) also explored the connection that exists between bank-specific risk and a bank's performance in Ghana. The study employed panel data of six banks between the periods of 2005 - 2009 thus, a five-year period to analyze the study relationship. Results of the investigation the study showed that exposures (i.e. operational and administrative) had a

substantial influence on the understudied banks' profitability. Moreover, conclusions from their results exhibited that the banks had higher profitability rate despite the high incidence of risk in their operations. They attributed this inconsistency in their study findings to issues such as; exorbitant lending, fees and commission the banks were charging at the time.

Afriyie and Akotey (2012), sought to investigate the effect of risk management on the profitability of banks using community and rural banks within the Brong Ahafo Region of Ghana. For the analysis, the study employed secondary data sources which were the reports of the selected banks from 2006 to 2010. Also, the study used a panel regression model for the study variables estimation measurement. The study results showed that there exists a positive significant relationship between risk management and the understudied rural banks' profitability (i.e. ROE and ROA). The study further observed that the understudied rural banking institutions did not have robust processes to manage their bank-specific exposures. Their study sought to emphasis mostly on the relationship between risk management in general and rural and community banks profitability measurement which is a focus of this present study however exploring the relationship in the case of universal banks in Ghana.

Additionally, the study by Apanga et al. (2016) sought to examine ERM practices in Ghanaian banking organizations in Ghana. Their sample came from select public banking establishments. Study results showed that the risk mitigation strategies being employed by the banks under consideration were aligned with sound risks management practices. Although their study made some fascinating findings with regards to how the understudied banks' risk management practices were comparable to the principles in the Basel II Accord. This study, however, did not look at the contribution of these practices to the bottom line of the institutions.

Danjuma (2015) presents a theoretical assessment of credit risk and its impact on customers' satisfaction in Nigerian Deposits Money Banks. The study examined concepts of credit using established assessment tools, proposing a conceptual framework to determine the link between the management of credit exposures and customer satisfaction as well as determining customer satisfaction perceptions using demographic information such as gender. Another study considered the performance of three private Indian banks, employing financial ratios for the statistical analysis. Nevertheless, this research only addresses the influence of credit risk on bank performance (Nataraja et al, 2018). Muriithi and Muigai (2017) make further contributions to the literature on bank-specific risks by examining the effect of operational risk on the profitability of banks in Kenya. Though this study recommended stringent operational management due to the observed negative impact of operational risk on profitability, the findings may not be universally applicable due to the limited sample selection.

As demonstrated in previous paragraphs, studies carried out on this topic have mainly focused on general drivers of financial performance, determining metrics for measuring risks as well as isolated investigations of specific risks on profitability. The scarcity of studies that analyze the impact of idiosyncratic risks on banking operations in Ghana demonstrates the need for attention on this topical issue. This empirical study, therefore, contributes to filling the knowledge gap on this topic by narrowing down to the Ghanaian market as well as undertaking a holistic assessment of the impact of various bank-specific risks on bank profitability within the Ghanaian context. This current work also investigates if this theorized association between liquidity and credit exposures prevails in the Ghanaian market as well as to investigate if there are reciprocal relationships that exist between other types of specific risks.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter explains how the research was carried out to investigate the identified problem. It explains the study approach, the design of the research, data collection, target population, determination of the sample size and the empirical model specification. The methodology outlined was structured to examine the relationship between bank-specific risks and profitability.

3.2 Study Approach

Using mainly secondary data which was collected from the audited annual reports of the universal banks, the study adopts the quantitative research approach to analyze the relationship between performance(profitability) and the identified bank-specific risks such as liquidity exposures.

3.3 Study Design

The study adopted the design employed by Saunders et al (2009) and Tan (2016). For this study, the descriptive and correlational analysis only was not sufficient. The explanatory research design is adopted to scientifically investigate the effects of specified factors. The descriptive research allowed for the evaluation of the respective levels of bank-specific risks faced by Ghanaian banks. The explanatory research design aided the assessment of the impact of bank-specific risks on bank profitability. Secondary data on bank financials was gathered and a panel regression model with the associated significance tests was used to analyze the data.

3.4 Data

In a quest to assess the bank-specific risks of universal banks in, the study will obtain data from secondary sources of the universal banks listed on the stock exchange, spanning the period 2009 to 2018. The time range selected provided relevant two-dimensional panel observations and represents a period of major changes for the Ghanaian banking system; typified by the universal banking principle resulting from the enactment of the Banking Act 673 as well as the recent financial crises globally and in the local market.

Data contained in the audited financial statements of banks were acquired from the individual banks and the Ghana Association of Bankers. Bank specific data on capitalization, credit risk indicators, operational risk indicators, liquidity indicators, bank performance and other relevant financial information was collected. The data collected was then be summarized and analyzed statistically through multiple regression analysis to establish the relationships and causality existing between the dependent and explanatory variables.

3.5 Sample Size

The study focused on the universal banks licensed by the Central Bank to operate in the Ghanaian market. The purposive sampling technique was employed to ensure that banks included in the sample had been in operation over the entire period of investigation (2009 – 2018). The sixteen (16) banks selected provided a good mix of listed and private banks. This technique provided a representative sample of the target population with 160 observations ($n = 160$) and ensured ease of access to financial data. However, as a result of the elected approach and its associated selection criteria, the sample may be biased towards larger banks and banks with high levels of risk exposure due to the length of operation requirements.

3.6 Specification of the Empirical Model

The existing literature on bank-specific risks and determinants of the financial performance of universal banks informed the selection of appropriate variables for objective analysis. The empirical model adopted for the study, borrowed elements from prior specifications in the works by Saunders et al. (2006), Tan (2016) and Saeed and Zahid (2016). The original functional form of the model was further expressed as:

$$\begin{aligned}
 DEP_{it} = & \beta_0 + \beta_1 CLR_{it} \\
 & + \beta_2 FGR_{it} + \beta_3 CIR_{it} + \beta_4 CAP_{it} + \beta_5 CDR_{it} + \beta_6 BS_{it} + \beta_7 TLD_{it} \\
 & + \beta_8 LAR_{it} + \beta_9 LV_{it} + \varepsilon_{it}
 \end{aligned}$$

Bank performance is the predicted variable and is represented in the above equation as in generic terms as DEP_{it} . In the various specifications of the model that were tested Bank performance (DEP_{it}) was measured by three profitability ratios; the Return on Assets (ROA), Return on Equity (ROE) as well as Net Interest Margin (NIM). From the above equation, the independent variables include the Capitalization (CAP), Credit Risk Reserves-Loan ratio (CLR), Operational Cost to Income Ratio (CIR), Financing Gap Ratio (FGR), Cash to Total Deposits ratio (CDR), Leverage (LV), Loans to Total Assets ratio (LAR), Total Loans to Deposits (TLD) and Bank size (BS).

3.7 Variable Definition and Measurement

3.7.1 Dependent Variables

Return on assets (ROA) is an indicator of the financial performance of the sampled universal banks in Ghana. It is used as a dependent variable, and it is measured as the profit after tax divided by the total assets.

Return on Equity (ROE) is an indicator of the financial performance of the sampled universal banks in Ghana. It is used as a dependent variable, and it is measured as the profit after tax divided by the total equity.

Net Interest Margin (NIM): This is viewed as a direct predictor of profitability of a bank as it captures the key components of a bank's operation; deposit-taking and loan offering to borrowers (Shen et al, 2009). Net Interest margin is used as a control variable in this study to predict profitability.

3.7.2 Independent Variables

Credit Risk Reserves-Loan Ratio (CLR) is used to capture a bank's exposure to credit risk in a given period. Credit exposure describes exposures to counterparty risks, measured as the ratio of a bank's risk reserve (loan loss reserves) to Gross loans (Tan, 2016). It is included as a regressor in this research work.

Total Loans to Deposits Ratio (TLD) is used to capture a bank's exposure to credit risk in a given period. This variable is measured as the ratio of a bank's total loans to deposits (Kargi, 2011). It is an independent variable in this study.

Financing Gap Ratio (FGR): The Financing Gap ratio, also known as the interest sensitivity ratio, is used as an alternative measure for liquidity risk as opposed to the traditional liquidity ratios (Awojobi et al, 2011). This variable is calculated as the ratio of interest-sensitive assets to interest-sensitive liabilities.

Loan to Total Assets Ratio (LAR) is used to capture a bank's exposure to liquidity risk in a given period. This determinant is measured as the ratio of a bank's total loans and advances to total assets (Tan 2016). It is an independent variable in this study.

Cash to Deposits Ratio (CDR) is an index generally used to assess how vulnerable a bank is to liquidity risk (PWC, 2009). It is used as a liquidity measure in this case. Therefore, as the ratio increases, a bank's risk exposure decreases.

Cost-Income Ratio (CIR): Cost to Income ratio is used to measure operational risk with the logic that inadequate or improper processes could expose a bank to potential costs and by extension have an impact of profitability. The chosen metric captures process, people and systems risk as well as legal risks (Muriithi and Muigai, 2017).

Bank Size (BS): Assets of the bank as stated on the balance sheet is used as a proxy to measure this independent variable. This variable is broadly used in the existing empirical literature with the natural logarithm specification as seen in Tan (2016).

Leverage (LV) is used as an independent variable to further understand the relative effect of debt on performance. The measure used to proxy this is the leverage ratio and it is calculated as total debt divided by total assets of a bank in a given period similar to the research performed by Saeed and Zahid (2016).

Capitalization (CAP) which is expected to have a positive effect on profitability is adopted from the study by Tan (2016). The Capitalization variable is computed as the ratio of total capital to total assets. This is similar to the proxy used in the study by Tan (2016). It is an independent variable in this study.

3.8 Method of Data Analysis

The study uses secondary financial data predominantly for a multiple linear regression analysis as outlined above. The regression outputs will be obtained with R Statistical Software and subsequently analyzed for model fit as well as the impact of the risks under study. In addition, further analysis using summary statistics and correlation matrix will be conducted as part of this study. The descriptive analysis involves the calculation of the central tendencies of the variables under consideration. This enables evaluation of the levels of exposure of banks to these bank-specific risks as well as to understand trends in exposures. Correlation analysis will uncover directional relationships that exist among the idiosyncratic risks as well as between profitability and each specified independent variable.

CHAPTER FOUR

ANALYSIS OF RESULTS

4.1 Introduction

The key focus of the study is to understand bank-specific risk, name credit, liquidity and operational risk and the effect that they have on profitability. To achieve this, secondary data on key financial metrics were gathered from the yearly reports of sixteen (16) banks spanning a ten-year period (2009 – 2018) to form a panel dataset. The financial data is used predominantly for a multiple linear regression analysis using R Statistical Software. In addition, further analysis using summary statistics and correlation matrix will be conducted as part of this present research work. This section provides a synopsis of the analysis performed and the respective results with associated commentary.

4.2 Descriptive Statistics

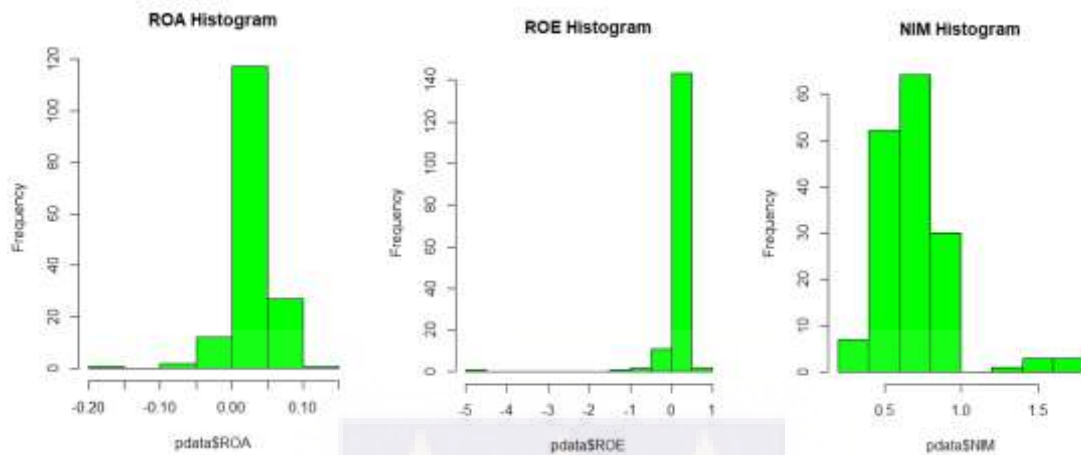
A review of the summary information provided an overview of the variables and a deeper understanding of the data. The table below (Table 3) summarizes the descriptive statistics of the variables used in this empirical study:

Table 4.1: Summary Statistics of Variables for Empirical Analysis

Variable	Mean	St. Deviation	Min	Max	Variance	Skewness	Kurtosis
ROA	0.027	0.031	-0.171	0.127	0.001	-1.882	10.894
ROE	0.150	0.428	-4.525	0.788	0.183	-8.484	89.932
NIM	0.696	0.232	0.292	1.695	0.054	1.898	5.915
CLR	0.043	0.049	0.000	0.236	0.002	1.677	3.004
TLD	0.578	0.220	0.080	1.853	0.048	1.451	6.601
FGR	0.755	0.505	0.084	6.110	0.255	7.468	78.836
LAR	0.386	0.114	0.093	0.660	0.013	-0.195	-0.323
CDR	0.241	0.320	0.049	3.925	0.102	9.733	110.883
CIR	0.610	0.294	0.092	3.203	0.087	4.717	37.512
BS	21.106	1.071	17.044	23.087	1.147	-0.713	0.762
LV	0.832	0.130	0.123	1.486	0.017	-2.032	14.710
CAP	0.159	0.082	0.009	0.842	0.007	4.184	29.779

NOTE: Return on Assets(ROA), Return on Equity(ROE), Net Interest Margin(NIM), Credit Reserves-Loan Ratio(CLR), Loans-Deposits ratio(TLD), Financing Gap ratio(FGR), Loans-Assets Ratio(LAR), Cash-Deposits ratio(CDR), Cost-Income ratio(CIR), Bank Size(BS), Leverage(LV), Capitalization(CAP)

The variables used in the study as measures of profitability, namely Return on Equity (ROE), Return on Assets (ROA) and Net Interest Margin (NIM) have mean values of 3%, 15% and 69% respectively. There is quite a difference between average values of ROA and ROE, however higher variation prevails for ROE with standard deviation being approximately 43%. The average for Bank Size (BS) is GHS 1.47 billion and Operational Cost to Income ratio (CIR) has a mean value of 61%. High variability is observed for Financing Gap ratio (FGR) and Total Loans to Deposits ratio with standard deviation values of 50.5% and 22% respectively. Furthermore, Leverage (LV) and ROA have negative skewness while ROE has a high as well as positive kurtosis.

Figure 4.1: Histograms of Profitability Measures

Further statistical work was performed to understand the three profitability measures that were selected to be used as predicted variables for this empirical study; ROA, ROE and NIM. Both ROA and ROE, though showing some semblance of a bell curve, are skewed left reflecting the negative skewness value shown in the summary statistics (Table 3). Unlike the variables, NIM is positively skewed.

4.3 Banking Data Trends Analysis

In line with research objective I, the trends in profitability and bank-specific risks of institutions in Ghana over the ten-year period (2009 – 2018) are investigated. The trend analysis enables the evaluation of the levels of exposure of banks to these bank-specific risks as well as the profitability gains over the period. To evaluate the trends in the industry, average values for the various profitability and risk variables were calculated for each year in the period. The average values were then plotted in a time series line chart to give an overview of the movements over the period over the study period. The various plots used to understand the trends are shown in Figure 4.2 and 4.3 below:

Figure 4.2: Profitability of Universal Banks in Ghana (2009 – 2018)

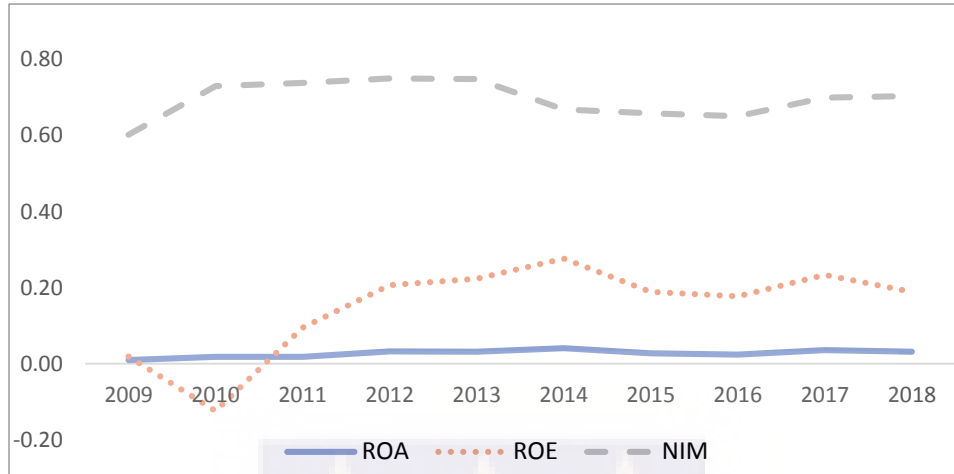
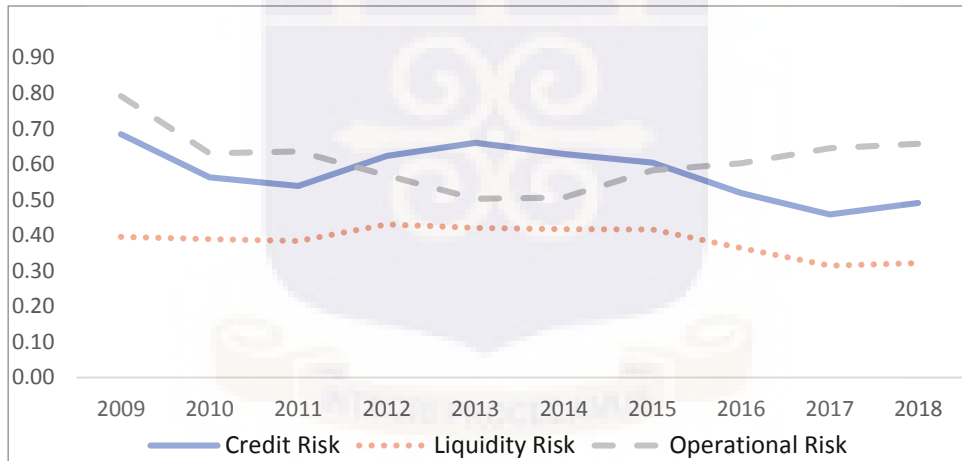


Figure 4.3: Trends in Specific Risk Exposures of Universal Banks in Ghana (2009 – 2018)



For profitability, generally, a flat behaviour in the performance of banks during the ten-year period is observed. The period begins with all profitability indicators specifically ROE and NIM, trending upwards after 2010, signifying a recovery from the effects of the great recession and further liberalization of the economy. Bank performance seems to flatten in the years following, with a subsequent downward trend from 2014 to 2016. The most recent dip is recorded in 2018 which may be heavily driven by the capital requirement directives as part industry strengthening

initiatives undertaken by the central which began in 2017. Additionally, it is detected that ROA remains mostly flat during the study period even though the average bank size or total assets consistently increase over the period. This behaviour may speak to the quality of the assets held by the universal banks as well as the relative impact of asset size on profitability. An opportunity is presented to do further research to find out the relative importance of asset size and asset mix for promoting profitability.

The bank-specific risks of interest, namely credit risk, liquidity risk and operational risk, were measure by Total Loans to Deposits ratio, Loans to Assets ratio and Operational Cost to Income ratio respectively. An increase in these ratios represents an increase of the exposure to the respective risk. Regarding risk exposures, Figure 5 shows that all three indicators experienced fluctuations over the period on average. However, the risk metrics are trending upwards going into 2018 which highlights the ineffectiveness of the risk management measures implemented by the various banking institutions in Ghana. A perpetuation of the upward trend in the bank-specific risks may have unanticipated adverse effects on the industry.

4.4 Bank-Specific Risk Dynamics

Another objective of this research was to probe the dynamics of bank-specific risks. Essentially the study assessed the relationship between the diverse set of bank-specific exposures such as credit and operational risk. To achieve this, the study performed a correlation analysis of the relevant variables. Correlation analysis allowed the study to uncover directional relationships that exist among the idiosyncratic risks as well as between profitability and each specified independent variable. Table 4 summarises the results of the correlation analysis and presents in them matrix below:

Table 4.2: Correlation Matrix

	ROA	ROE	NIM	CLR	TLD	FGR	LAR	CDR	CIR	BS	LV	CAP
ROA	1.00											
ROE	0.61 ***	1.00										
NIM	0.09	-0.07	1.00									
CLR	-0.05	-0.01	-0.14 *	1.00								
TLD	-0.03	0.00	-0.16 **	0.05	1.00							
FGR	0.00	0.05	0.05	0.11	0.30 ***	1.00						
LAR	-0.07	-0.06	-0.10	-0.09	0.70 ***	-0.27 ***	1.00					
CDR	0.00	0.01	0.01	0.25 ***	0.38 ***	0.76 ***	-0.25 ***	1.00				
CIR	-0.77 ***	-0.44 ***	-0.11	0.15 **	-0.05	0.01	-0.04	0.06	1.00			
BS	0.50 ***	0.34 ***	0.18 **	-0.05	-0.21 ***	-0.17 **	-0.09	-0.07	-0.40 ***	1.00		
LV	-0.10	-0.06	0.04	-0.13 *	-0.14 *	-0.39 ***	0.21 ***	-0.40 ***	0.09	0.35 ***	1.00	
CAP	0.07	0.09	-0.04	0.24 ***	0.33 ***	0.61 ***	-0.20 **	0.66 ***	0.01	-0.39 ***	-0.74 ***	1.00

NOTE: Return on Assets(ROA), Return on Equity(ROE), Net Interest Margin(NIM), Credit Reserves-Loan Ratio(CLR), Loans-Deposits ratio(TLD), Financing Gap ratio(FGR), Loans-Assets Ratio(LAR), Cash-Deposits ratio(CDR), Cost-Income ratio(CIR), Bank Size(BS), Leverage(LV), Capitalization(CAP)
*Significance level: (***) 0.01, (**) 0.05, (*) 0.1*

The observed relationships between the various variables in this study are further captured in the heat map data visualization shown in Appendix V section of this report. From the results a strong correlation of ROA with the Cost to Income (CIR) and Bank size (BS) variables. These relationships are negative and positive respectively. A negative correlation is recorded between

the various risk measures (CIR, LAR, FGR, TLD, CLR, CDR) and the profitability measures with the exception of the Financing Gap ratio (FGR). On average this negative relationship is not strong. Furthermore, the correlation matrix and the heat map are used to assess the relationship between the various types of bank-specific risks. TLD is positively correlated with LAR and this relationship is strong. This supports the findings from the literature review, that credit risk and liquidity risk have a reinforcing effect on each other.

Furthermore, there are other independent variable pairs that are highly correlated. FGR and CDR, CDR and CAP, as well as LV and CAP are pairs of regressors that are highly correlated. To manage the issue of multicollinearity in the model, it was necessary to calculate the Variance Inflation Factors of the independent variables. This is especially important for the variables that show a strong positive relationship. The resulting factors are shown in the table below:

Table 4.3: Variance Inflation Factors for Independent Variables

INDEPENDENT VARIABLE	VARIANCE INFLATION FACTOR
TLD	3.53
LAR	3.29
CIR	1.27
BS	1.51
LV	2.3
CAP	3.49

NOTE: Loans-Deposits ratio (TLD), Loans-Assets Ratio (LAR), Cost-Income ratio (CIR), Bank Size (BS), Leverage (LV), Capitalization (CAP)

From the table above, the independent variable Loans to Deposits ratio (TLD) recorded the highest factor of 3.53. The remaining independent variables had factors of lower value. With all independent variables recording VIF values lower than 10, high collinearity is not an issue with the specified model. Financing Gap Ratio (FGR) and Cash to Deposits Ratio (CDR) due to their

high correlation were excluded from the final specified model to avoid any semblance of multicollinearity issues. In addition, since the two aforementioned variables measure the same type of risk as Loans to Assets Ratio (LAR), liquidity risk, they were dropped from the analysis to avoid any redundancy in the chosen methodology.

4.5 Final Specified Model

Information gathered from the existing literature together with the preliminary analysis conducted on the bank-specific data in the previous paragraphs was to specify the final model.

The final model used in the regression analysis is specified below:

$$ROA_{it} = \beta_0 + \beta_1 TLD_{it} + \beta_2 LAR_{it} + \beta_3 CIR_{it} + \beta_4 BS_{it} + \beta_5 LV_{it} + \beta_6 CAP_{it} + \varepsilon_{it}$$

This model as specified above achieved an appreciable explanatory power which will be further explained in the discussion of the results in the subsequent paragraphs of this section.

4.6 Results and Discussion

This goal of this section is to confer the results of this study, highlighting the key learnings from the research. Furthermore, this section situates these findings within the context of existing literature both in the local and foreign banking industries. To investigate the relative impact of performance drivers and more importantly the effect of bank-specific risks on profitability, multiple regression analysis is performed to examine panel data constructed with financial information for 16 universal banks in Ghana over the ten-year period (2009 – 2018). Throughout the analysis, a variety of model specifications were explored including a Pooled OLS model, first differences model, Fixed Effects model, Random Effects model and Between estimator model.

At the various stages of model building, variables were changed in the equation to ensure the formulation of a robust model and tests were conducted for significance as well. The Pooled OLS model was considered and ran as part of the analysis. This model was then compared to the Random effects model by way of the Lagrange Multiplier tests as shown in the table contained in Appendix IV. The test produced a very small p-value which indicates that the random effects model be specified for this analysis. Since the study involved working with panel dataset, the Hausman test was performed to identify which model to estimate between the Fixed and Random Effects model.

Table 4.4: Hausman Test Results (Fixed versus Random Effects model)

Statistic	Value
Df	6
Chi-Square Stat	11.24
p-value	0.08

Table 4.4 provides the results of the Hausman test. Based on the results of the test, the study proceeded to estimate the Random Effects model. This is because the p-value of 0.08 is not less than 5%. Therefore, the investigation fails to reject the null hypothesis that there is no correlation between the unique errors and the regressors. The preferred model per the test results was the Random Effects model. Subsequently, the study analysed for model fit and the multivariate regression model was then specified excluding select independent variables to address multicollinearity and optimize the model. These variables include CLR, FGR and CDR. Model specifications with ROE and NIM as the dependent variables were tested yielded insignificant results. Therefore, the final model specification with a satisfactory Adjusted R-squared of 0.63, used **ROA** as the predicted variable and the regression outcomes are outlined in Table 4.5 below:

Table 4.5: Random Effects Model Regression Results

ROA as Dependent Variable			
Variable	Coefficient	Standard Error	p-value
Intercept	-0.13***	0.04	0.0019
TLD	-0.02	0.01	0.1533
LAR	0.02	0.02	0.3538
CIR	-0.07***	0.01	0.0000
BS	0.01***	0.00	0.0000
LV	0.00	0.02	0.9887
CAP	0.08**	0.03	0.0113
R-Squared	0.6410	Total Sum of Squares	0.1278
Adjusted R-Squared	0.6269	Residual Sum of Squares	0.0459
N	160	Chi-Square Stat	273.21
p-value	0.0000		

NOTES: Return on Assets (ROA), Loans-Deposits Ratio (TLD), Loans-Assets Ratio (LAR), Cost-Income Ratio (CIR), Bank Size (BS), Leverage (LV), Capitalization (CAP)
*Significance Level: (***) 0.01, (**) 0.05, (*) 0.1*

Risk Determinants

The multiple regression analysis performed aided in determining the respective effects of bank-specific risks as summarized in Table 4.5. The specific risks tested in this study are credit risk, liquidity risk and operational risk represented by TLD, LAR and CIR variables respectively. The variable CIR was the only risk determinant observed to have effects on profitability at the 5% significant level with a p-value of 0.0000. Per the coefficient, a unit increase in operational risk will decrease bank profitability by 7%. Postulations of Haneef et al (2012) in their work indicate that operational risk has been increasing alongside the scaling up of banks. From the results of

this study as shown in figure 4.3, operational risk has been trending upwards for the selected universal banks in Ghana since 2014 confirming the statements of Haneef et al (2012). This, on one hand, could be viewed as a very problematic trend as operational risk is believed to reinforce other types of risks faced by banks according to Mittelstaedt (2005). However, from the correlation analysis, the operational risk did not have a strong correlation with the other types of bank-specific risk under investigation. On the contrary, a weak and negative relationship is observed in Table 4.2.

More locally relevant, the findings of Boahene et al. (2012) are confirmed by this investigation of the link that exists between bank-specific risks and profitability in Ghana. Their study, which also made use of panel data from six commercial banks, showed that operational risk had a significant impact on the understudied banks' profitability. This impact is further emphasised in this current research work. From the outcomes of the estimated random effects model, operational risk on average has a significantly negative impact on the profitability of banks. With the alignment of the different studies, stringent management of operational risk should be adhered to by banks due to the observed negative link between profitability and operational exposures. However, it is important to point out that the findings may not be universally applicable due to market-specific practices such as prohibitive lending as pointed out by Boahene et al. (2012).

Credit and Liquidity risk circularity is also observed in universal banks in Ghana as well. This reciprocal effect between these two key types of internal risks is evident from results in Table 4.2 and has been explored by existing literature. According to Ghenimi et al (2017), credit and liquidity risks are the two most important risks faced by firms due to their nature and how

integral they are to the financial intermediation role of banks. Credit and liquidity risk are considered major contributors to the collapse of banks across the globe. The correlation coefficient of 0.7 between Loans to Deposits ratio (TLD) and Loan to Assets ratio (LAR), representing credit and liquidity risk respectively, shows a strong, positive relationship between the two risks. Intuitively, an increase payment defaults on the part of borrowers will limit the funds available to a bank to honour withdrawal demands of its depositors. This positive relationship sheds light on the close connectedness of the asset side and liability structure of a bank's balance sheet (Ghenimi et al, 2017).

The variables for Credit risk and Operational risk had a negative and positive effect on ROA respectively. Credit risk had a coefficient of -0.02 which can be interpreted as a unit rise in credit risk exposure will cause a 2% decline in profitability. The observed effect of liquidity risk is against expectations where a unit increase in liquidity risk increases profitability by 2%. However, with respective p-values of 0.15 and 0.35, the two risk variables are not significant at the 5% level and therefore the value of their coefficients are relevant and will not be recommended for use in any predictive analysis work on bank profitability.

The results of this work are further situated in the global context to understand how risk dynamics of universal banks compare to banking sectors in other parts of the world. In alignment with the work of Staikouras and Wood (2004), the results of this research work show that similar to their European counterparts, credit risk negative impacts profitability in the local context. Directionally, the results of this study align with that of Staikouras and Wood (2004) who looked at European banks and discovered that credit and liquidity exposures respectively have negative and positive effects on profitability. Furthermore, the results of this study deviate from the

findings of research on UK banks conducted by Saeed and Zahid (2016). Their work presented a positive relationship between credit risk and profitability whereas the results of this study show that an increase in the level of credit exposures of a universal bank in Ghana, on average has an adverse effect on profitability.

Within the sub-region, the findings of this study align with the observed impact of credit risk on profitability in the case of Nigerian banks as presented in the work of Kolapo et al. (2012). Their results showed that the credit risk indicators all move in the opposite direction as compared to profitability and this observed relationship is consistent across banks. The same is confirmed by the results of this current investigation as seen in the regression results of Table 4.4. Essentially, universal banks in Ghana can increase their chances of improving their bottom line by effectively mitigating levels of credit risk exposure. The insignificance of liquidity risk on the profitability of banks, as observed by Hakim and Neamie (2011) in their work on Egyptian banks, is supported by the results of this current research work. The coefficient of the liquidity risk variable (LAR) does not emerge as significant per the regression outcomes. However, directionally the outcomes for liquidity risk show a positive impact on bank profitability.

Non-risk Determinants

Three non-risk determinants were included in the final regression model specification; Banks Size (BS), Leverage (LV) and Capitalization (CAP). Both BS and CAP variables were significant at the 5% level with p-values of 0.00000032 and 0.011295. With a positive effect on profitability, a 1% increase in the size of a universal bank will result in a 1% increase in profitability. Unlike in the case of European banks as presented by Coskun and Georgevski (2018) whose results show that bank size negatively affects performance, this study found that

Bank size had a significant and positive impact on bank performance. The results here align with theory considering that larger banks with larger asset base can offer more loans and generate more profit and value for shareholders as explained by Ongore and Kusa (2013). In the same direction, a unit increase in capitalization results in an 8% increase in profitability of a bank. However, Leverage as a non-risk variable did not have significant effects on profitability. This is an interesting finding since it has implications for working capital of universal banks and points to the relative importance of capital over debt in the case of the pivotal financial intermediaries in Ghana.

Overall, the estimated model achieves a satisfactory level regarding its explanatory power with an R-Squared of 0.64102 and an Adjusted R-squared of 0.62694. Results were aligned with expectations with the exception being the observed positive impact of liquidity risk. A point worth noting is that the variable Credit Risk Reserve to Loan ratio (CLR), which was specified as part of the initial model as the variable for credit risk, was dropped due to the inconsistent reporting of Credit Risk Reserves or Loan Loss Provisions by banks. This necessitated the use of a proxy and may have impacted the explanatory power of the model and the resulting observed impact of credit risk.

CHAPTER FIVE

CONCLUSION & RECOMMENDATION

5.1 Introduction

This study has engaged in a holistic investigation which has provided insights into the risk dynamics and the risk effects on the performance of the Ghanaian banking industry. This section recaps the foremost outcomes of the investigation and highlights the relevant deductions drawn from the findings. The chapter also provides a brief discussion of the implications as well as practical recommendations of the study findings.

5.2 Summary of Major Findings

The study estimated a random effects model to provide empirical results that highlight the effects of risk and non-risk performance drivers. The research methodology employed ensured that the objectives of the study as outlined in chapter I of this report were achieved. Firstly, the study findings show that bank-specific risks being investigated, on average were trending upwards across the Ghanaian banking sector. In the case of operational risk, this trend has been ongoing since 2014. Secondly, the theorized relationship between credit risk and liquidity risk was confirmed by the results of this study. The variables of these two types of risk had a strong and positive relationship per their correlation coefficient. However, Operational cost proved to be correlated negatively with the other bank-specific risks. This brings to dispute the claims that operational risk tends to reinforce the other specific risk in banks. The third and final objective which considered the performance implications of the bank-specific risks was also achieved. The results were aligned with expectations with the exception being the observed positive impact of

liquidity risk. Three non-risk determinants were included in the final regression model specification. Both Bank Size and Capitalization were significant at the 5% level with positive effects on profitability. However, Leverage did not have significant effects on profitability which perhaps points to the relative importance of equity over debt with regard to the performance of universal banks.

5.3 Conclusion

Various research studies show that ineffective risk management activities have in part produced failures, takeovers and lower profit margins of banks across the globe (Allen, 2013). The purpose of this empirical work was to fill the knowledge gap by understanding the local context and evaluate the impact of various bank-specific exposures on performance within the context of universal banks in Ghana. The results show that the theorized adverse impact of bank-specific risks on performance of universal banks in Ghana prevails with the exception of liquidity risk which on average has a positive impact on profitability. Operational risk emerges as a significant determinant of bank performance in Ghana highlighting the need to have robust event reporting systems to minimize losses due to failed processes and systems.

Furthermore, the study found operational risk to be negatively correlated with the other bank-specific risks. This finding indicates that operational risk does not reinforce the other specific risks within the Ghanaian context. However, the positive correlation between credit risk and liquidity risk indicates that risk management measures of banks need to jointly mitigate the aforementioned risks in order to be effective. Directionally, the positive impact of liquidity risk on profitability demonstrates that universal banks in Ghana should expand on their lending activities in order to improve their bottom-line and deliver more value to shareholders. The

findings of this study generally align with the postulations of researchers in the existing literature with slight deviations in the risk dynamics of universal banks in Ghana as compared to their European counterparts.

5.4 Recommendations

The importance of this study is evident in the potential contributions that would be made to academia, practice, and policy through the findings. The results of the study highlight key areas that require the attention of the stakeholders. These points were explored and the following recommendations are made grounded on the various findings and discussions in the previous paragraphs:

- I. Banks in Ghana should not be managing credit or liquidity risk in isolation. The two types of bank-specific exposures should be mitigated concurrently due to the reciprocal relationship that exists between the types of risk as established by the results of the study.
- II. High priority should be given to operational exposure management in universal banks. Robust systems should be implemented by banks to capture and report events in a timely fashion. This will aid management to monitor as well as mitigate any exposures arising exposures from people, process and systems.
- III. Bank officials and regulators should prioritize the mobilization of capital as opposed to financing operations through debt. The results showcase this with Leverage not showing any significant effects on profitability. This interesting result points to the relative importance of capital over debt in delivering value to shareholders.

- IV. Larger bank sizes should be encouraged by the Central Bank per the results of the study. This can be achieved by promoting mergers and offering incentives for smaller banks to consolidate their assets. The resulting larger banks have a higher potential to produce greater financial performance.
- V. The regulator should enforce the reporting of Credit Risk Reserves by universal banks on a consistent basis. This will allow proper monitoring of credit risk and stronger analysis of its impact on profitability.

5.5 Implications for Further Research

The methodology applied in this research work ensured the exploration of the available data and more importantly the achievement of the identified research objectives. However, considering the limitations of the study as well as the constantly evolving financial sector and associated risks, the researcher recommends that further studies should be undertaken to increase the stakeholders' understanding of the risk dynamics of banking in Ghana. The insignificance of the credit and liquidity risk variables requires further research probing. It is recommended that for further research the variable for credit risk be changed. Due to the inconsistent reporting of Credit Risk Reserves, efforts should be made to gather data on non-performing loans for the purpose of a similar investigation.

The investigation was restricted to universal banks in Ghana, as at the end of December 2018. Undertaking this study with Ghanaian banks improved the ease of access to the relevant secondary data and provided locally relevant results. The relevant data were collected from financial statements of public and private banks in Ghana for a ten-year period (2009 to 2018). The chosen study period allowed a holistic analysis of the impact of bank-specific risk in the

post-financial crisis era. As ECOWAS moves towards a more integrated economic zone, expanding the sample size to include banks from other countries in the sub-region will provide relevant insights for future decision making and regulation. Contextually, the study was limited to an assessment of bank-specific exposures and their effect on the profitability of Ghanaian universal banks. However, in recent times the microfinance segment of the financial sector has also experienced some financial distress, requiring the intervention of the Bank of Ghana to secure depositor funds. An exploration of this topic within the microfinance segment could provide insights into the management of firm-specific risks and the effects on performance.



REFERENCES

- Afriyie, H.O., & Akotey, J.O. (2013). Effect of risk management on the profitability of rural banks in the Brong Ahafo Region of Ghana. *European Journal of Business and Management*, 5(24), 22-39
- Agbada A.O & Osuji, C.C. (2013). The efficacy of risk management and firm performance in Nigeria. *International Review of Management and Business Research*, 2(1)
- Ahmad, N. H., & Ariff, M. (2007). Multi-country study of bank credit risk determinants. *International Journal of Banking and Finance*, 5(1), 135-152.
- Allen, S. L. (2013). *Financial risk management: a practitioner's guide to managing market and credit risk*. Hoboken, NJ: Wiley.
- Antoun, R., Coskun, A., & Georgievski, B. (2018). Determinants of financial performance of banks in Central and Eastern Europe. *Business and Economic Horizons*, 14(3), 513-529.
- Apanga, M. A., Appiah, K. O., & Arthur, J. (2016). Credit risk management of Ghanaian listed banks. *International Journal of Law and Management*, 58(2), 162-178.
- Asare-Bekoe, K. (2010). A Risk-based Assessment of Ecobank Ghana Limited. Credit risk management of Ghanaian listed banks. *Copenhagen Business School*.
- Awojobi, O., Amel, R., & Norouzi, S. (2011). Analysing Risk Management in Banks: Evidence of Bank Efficiency and Macroeconomic Impact. MPRA Paper, University Library of Munich, Germany. <https://EconPapers.repec.org/RePEc:pra:mprapa:33590>
- Bandlamudi, K. & Taidala, V. R. (2017). Role of Commercial Banks In The Economic Development of India. *International Journal of Management and Applied Science*, 3(4), 1 - 4.

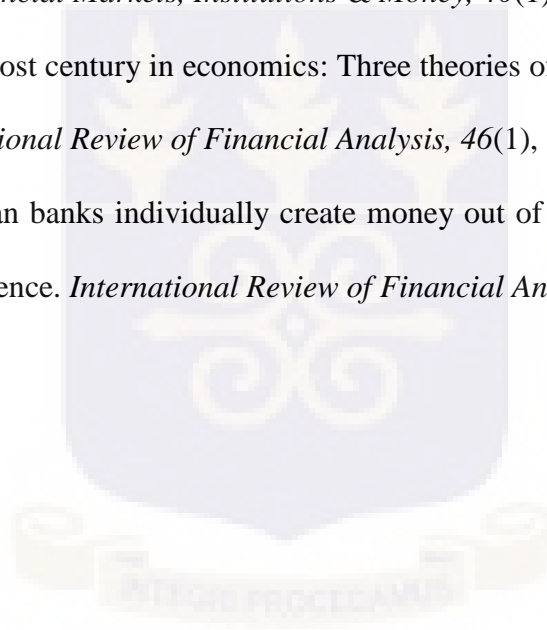
- Basel Committee on Banking Supervision. (2003). Overview of the New Basel Capital Accord. *Bank for International Settlements*.
- Berger, A. (1995). The Relationship between capital and earnings in banking. *Journal of Money, Credit and Banking*, 27(2), 432 - 456.
- Bikker, J. A., (2010). Measuring Performance of Banks: An Assessment. *Journal of Applied Business and Economics*, 11(4), 141 - 159.
- Bikker, J.A., & Bos, J.W.B. (2008). Bank Performance: A Theoretical and Empirical Framework for the Analysis of Profitability, Competition and Efficiency. Routledge International Studies in Money and Banking. Routledge, London & New York.
- Boahene, S. H., Dasa, J., & Agyei, S. K. (2010). Credit risk and profitability of selected banks in Ghana. *Research Journal of Finance and Accounting*, 3(7), 6-14.
- Boyd, J. H., & Runkle, D. E., (1993). Size and Performance of Banking Firms: Testing the Predictions of Theory. *Journal of Monetary Economics*, 31(1), 47-67.
- Chance, M. & Brooks, T.B. (2011). *An introduction to derivatives and risk management*, (8th ed.). South-Western: Cengage Learning.
- Coskun, A., & Georgievski, B. (2018). Determinants of financial performance of banks in Central and Eastern Europe. *Business and Economic Horizons*, 14(3), 513 - 529.
- Danjuma, I. (2015). Relationship between Credit Risk Management and Customer Satisfaction in Deposits Money Banks: A Conceptualisation. *Proceedings of the Third Middle East Conference on Global Business, Economics, Finance and Banking*. 16-18. Paper ID: DF516.

- Dar, B. (2012). Implications of risk management practices on the financial performance of sugar manufacturing firms in Kenya. *International Journal of Arts and Humanities, AFRREVIJAH*, 1(1), 14-29.
- Fouche, C. H., Mukuddem-Petersen, J., & Petersen, M. A. (2006). Continuous-time stochastic modelling of capital adequacy ratios for banks. *Journal of the International Society for Business and Industrial Statistics*, 22(1), 41-71.
- Ghemini, A. et al. (2017). The effects of liquidity risk and credit risk on bank stability: Evidence from the MENA region. *Borsa Istanbul Review*. 17(4): 238-248.
- Gordon, L., Loeb, M. & Tseng, C., (2009). Enterprise risk management and firm performance: A contingency perspective. *Journal of Accounting and Public Policy*, 28(4), 301-327.
- Gossy, G. (2008). *A Stakeholder Rationale for Risk Management: Implications for Corporate Finance Decisions* (1 ed.). Gabler Verlag. DOI:10.1007/978-3-8349-9758-6
- Grace, M., Leverty, T., & Shimpi, P. (2010). The value of investing in Enterprise Risk Management. Atlanta: Robinson College of Business.
- Hakim, S. & Neami, S. (2011). Performance and Credit Risk in Banking Performance: A Comparative Study of Egypt and Lebanon. ERF Working Paper Series, WP 0137.
- Haneef, S., Riaz, T., Ramzan, M., Ali Rana, M. and Ishaq, H.M. (2012). Impact of risk management on non-performing loans and profitability of banking sector of Pakistan. *International Journal of Business and Social Science*, 3(7), 307-315.
- Havrylchyk, O, & Jurzyk, E. (2011). Profitability of foreign banks in Central and Eastern Europe. *Economics of Transition and Institutional Change*. 19(3), 443-472.
- Kargi, H.S. (2011). Credit Risk and the Performance of Nigerian Banks. AhmaduBello University, Nigeria.

- Keynes, J. M. (1936). *The General Theory of Employment, Interest and Money*. London: Macmillan.
- Kolapo, T. F., Ayeni, R. K., & Oke, M.O. (2012). Credit Risk And Commercial Banks' Performance In Nigeria: A Panel Model Approach. *Australian Journal of Business and Management Research*. 2(2), 31-38.
- Lartey, V. C., Antwi, S., & Boadi, E. K. (2013). The Relationship between Liquidity and Profitability of Listed Banks in Ghana. *International Journal of Business and Social Science*, 4(3), 48 - 56.
- MacLeod, H. D. (1856). *The Theory and Practice of Banking*, 2 vols., London: Longman, Greens and Co.
- Mandelbrot, B. B., & Hudson, R. L. (2004). *The (Mis)Behaviour of Markets: A Fractal View of Risk, Ruin, and Reward*. London: Profile Books.
- Markowitz, H. (1952). Portfolio Selection. *The Journal of Finance*, 7(1), 77-91.
- Mittelstaedt, R.E. (2005). *Will Your Next Mistake be Fatal? Avoiding the Chain of Mistakes That Can Destroy Your Organisation*. Wharton School Publishing, Upper Saddle River, NJ.
- McAllister, P. H., & McManus, D. (1993). Resolving the Scale Efficiency Puzzle in Banking, *Journal of Banking & Finance*, 17(2-3), 389-405.
- Modigliani, F., & Miller, M. H. (1958). The Cost of Capital, Corporation Finance and the Theory of Investment. *The American Economic Review*, 48(3), 261-297.
- Muriithi, J.G. & Muigai, R.G. (2017). Quantitative analysis of Operational Risk and Profitability of Kenyan Commercial Banks using Cost Income Ratio. *Journal of Economics and Finance*. 8(3): 76-83.

- Nataraja, N.S., Nagaraja, R. C., & Ganesh, L. (2018). Financial Performance Of Private Commercial Banks In India: Multiple Regression Analysis. *Academy of Accounting and Financial Studies Journal*, 22(2): 1-12.
- Omankhanlen, A. E. (2012). The Role of Banks in Capital Formation and Economic Growth: The Case of Nigeria. *Economy Transdisciplinarity Cognition*, 15(1), 103-111.
- Ongore, V. O., & Kusa, G. B. (2013). Determinants of Financial Performance of Commercial Banks in Kenya. *International Journal of Economics and Financial Issues*, 3(1), 237-252.
- Petria, N., Capraru, B., & Ihnatov, I. (2015). Determinants of banks' profitability: evidence from EU 27 banking systems. *Procedia Economics and Finance*, 20(1), 518 - 524.
- PricewaterhouseCoopers & Ghana Bankers Association. (2009). The Global Financial Meltdown: Will Ghana's Banking Industry survive the crunch. The Ghana Banking Survey Report.
- Rasihah, D. (2010). Theoretical Framework of Profitability as Applied to Commercial Banks in Malaysia. *European Journal of Economics, Finance and Administrative Sciences*, 19(1), 74-97.
- Saeed, M. S., & Zahid, N. (2016). The Impact of Credit Risk on Profitability of the Commercial Banks. *Journal of Business & Financial Affairs*, 5(2), 1-7.
- Samuelson, P., & Nordhaus, W. (1995). *Economics*. New York: McGraw-Hill.
- Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research methods for business students* (3rd Edition ed.). Prentice Hall.

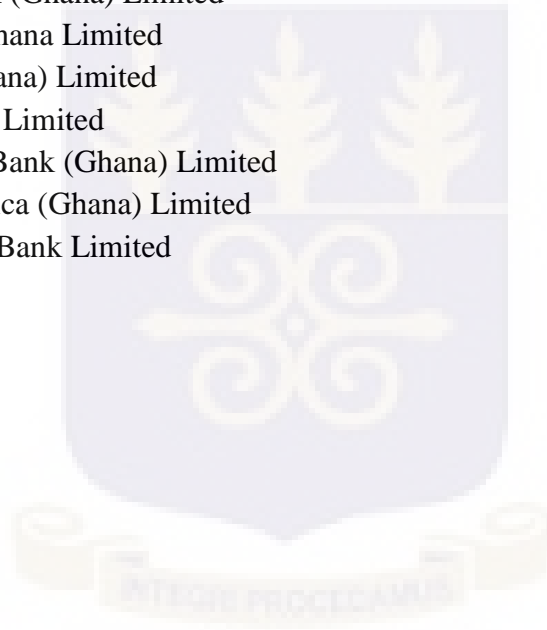
- Scholtens, B., & van Wensveen, D. (2003), The Theory of Financial Intermediation: An Essay On What It Does (Not) Explain. *SUERF - The European Money and Finance Forum*.
- Shen. (2009). Bank Liquidity Risk and Performance. *Review of Pacific Basin Financial Markets and Policies*.
- Staikouras, C. K., & Wood, G. E. (2004). The Determinants of European Bank Profitability. *International Business & Economics Research Journal*, 3(6), 57-68.
- Tan, Y. (2016). The impacts of risk and competition on bank profitability in China. *Journal of International Financial Markets, Institutions & Money*, 40(1), 85-110.
- Werner, R. A. (2016). A lost century in economics: Three theories of banking and the conclusive evidence. *International Review of Financial Analysis*, 46(1), 361 - 379.
- Werner, R. A. (2014). Can banks individually create money out of nothing?—The theories and the empirical evidence. *International Review of Financial Analysis*, 36(1), 1 – 19.



APPENDIX I

LIST OF SAMPLED BANKS

1. Access Bank Ghana Plc
2. Agricultural Development Bank Limited
3. Bank of Africa Ghana Limited
4. Barclays Bank of Ghana Limited
5. CAL Bank Limited
6. Ecobank Ghana Limited
7. Fidelity Bank Limited
8. First Atlantic Bank Limited
9. GCB Bank Limited
10. Guaranty Trust Bank (Ghana) Limited
11. Omni-BSIC Bank Ghana Limited
12. Société General (Ghana) Limited
13. Stanbic Bank Ghana Limited
14. Standard Chartered Bank (Ghana) Limited
15. United Bank for Africa (Ghana) Limited
16. Universal Merchant Bank Limited

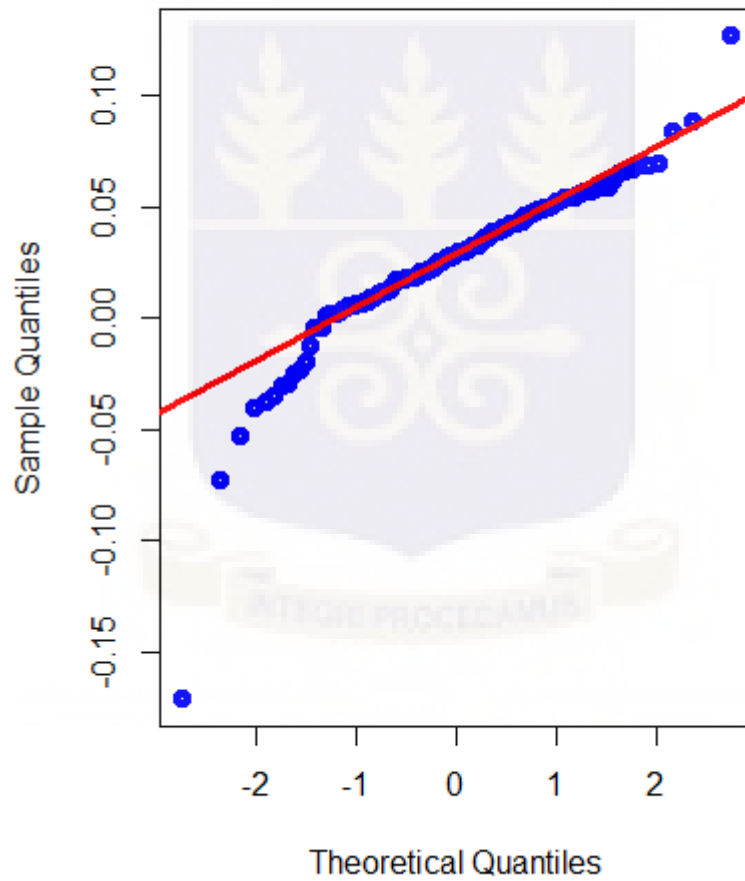


APPENDIX II

DISTRIBUTION PLOTS OF DEPENDENT VARIABLES

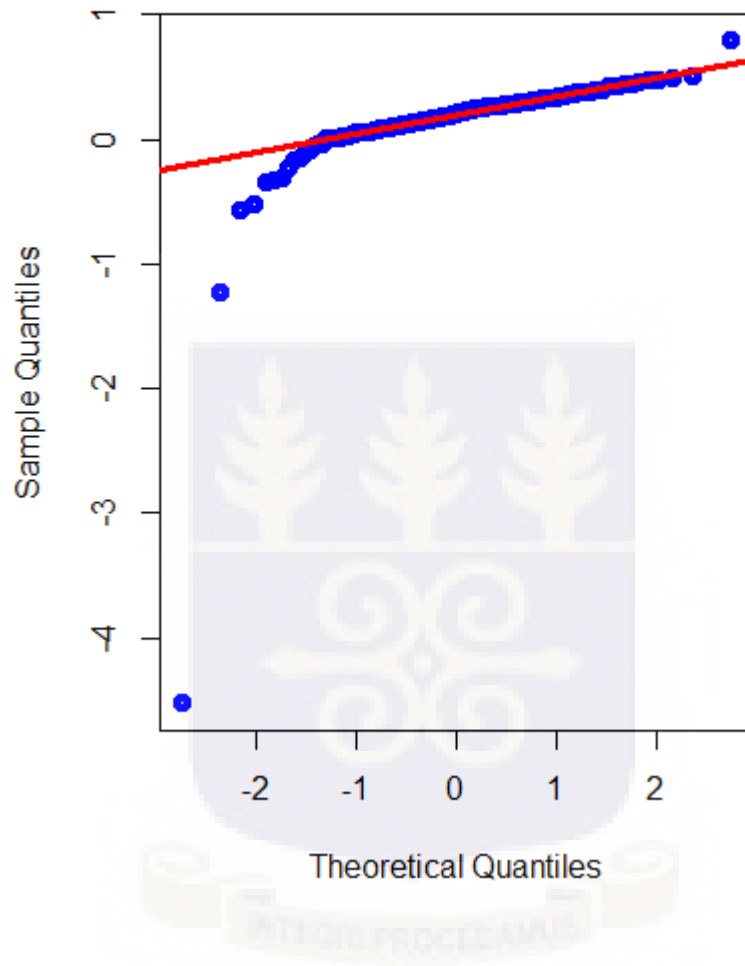
RETURN ON ASSETS (ROA)

Normal Q-Q Plot



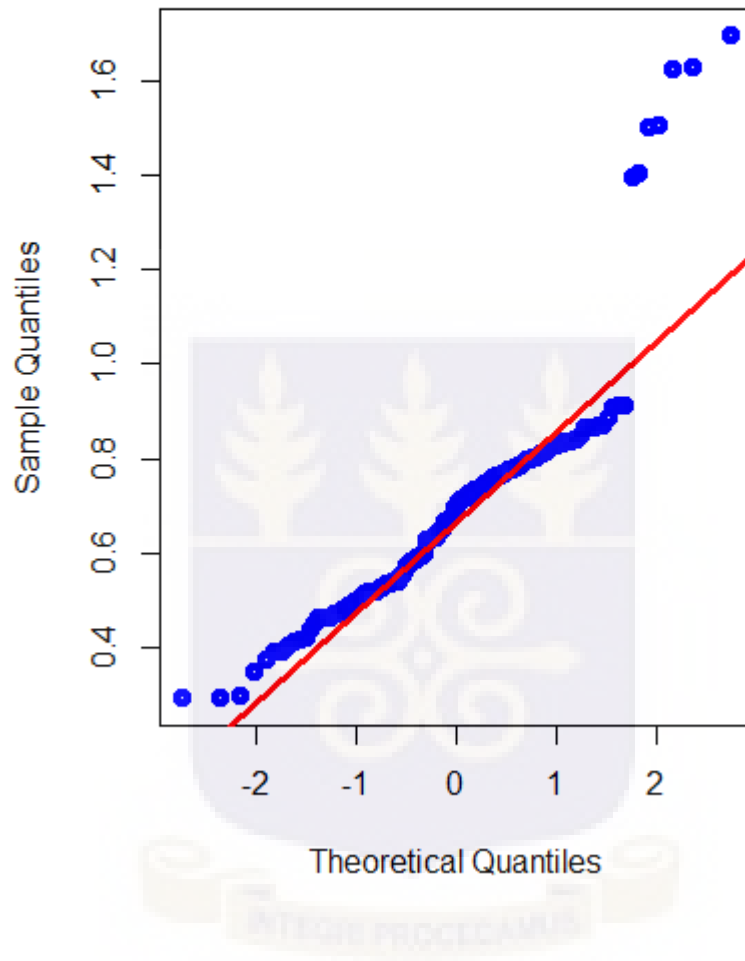
RETURN ON EQUITY (ROE)

Normal Q-Q Plot



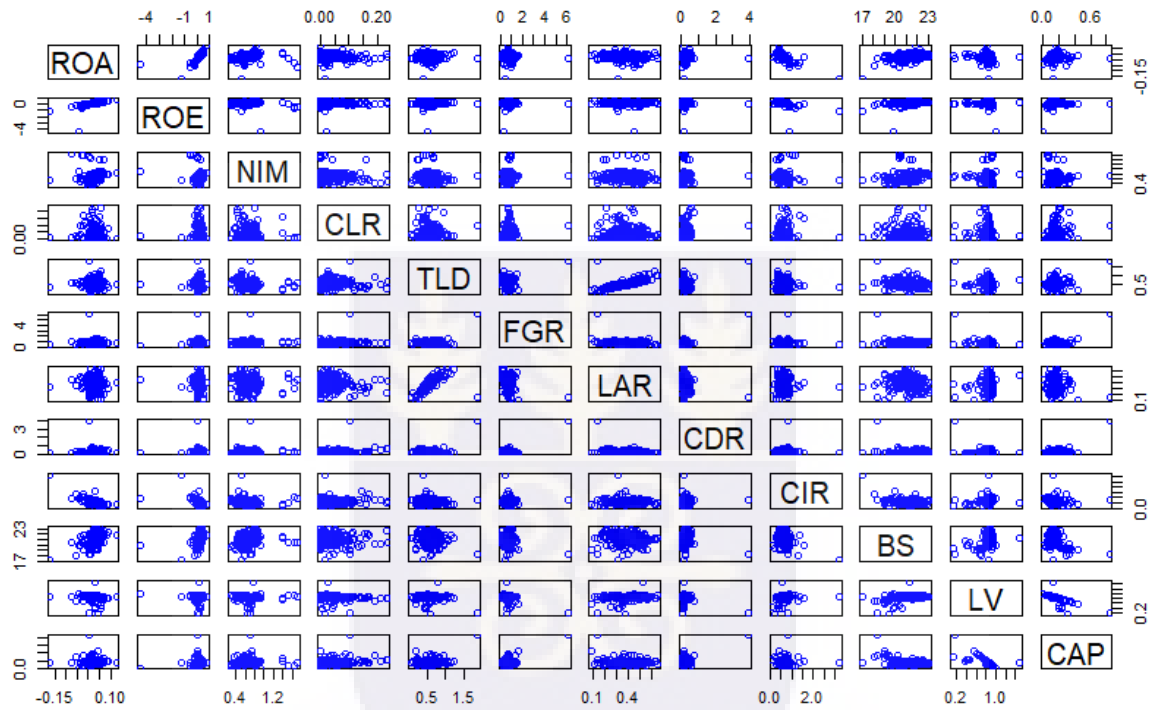
NET INTEREST MARGIN (NIM)

Normal Q-Q Plot



APPENDIX III

CORRELATION PLOT OF SELECTED RESEARCH VARIABLES



APPENDIX IV

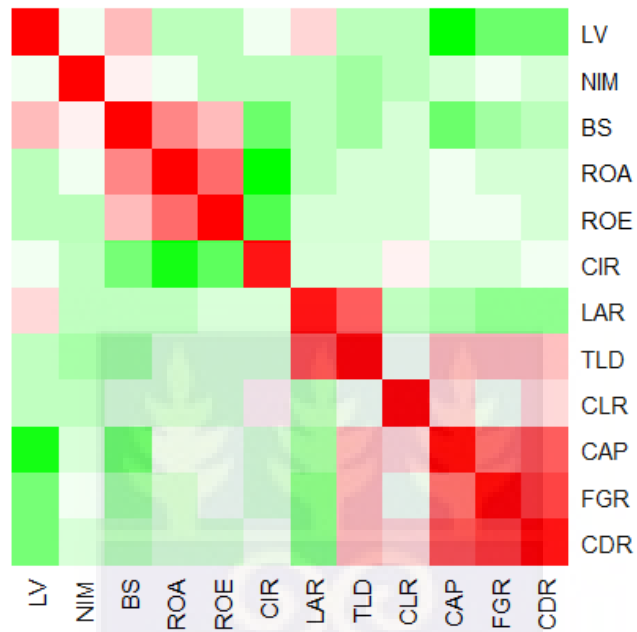
LAGRANGE MULTIPLIER TEST (RANDOM EFFECTS vs OLS)

Statistic	Value
normal	8.497
p-value	2.2E-16
Test result	Significant effects



APPENDIX V

HEAT MAP VISUALIZATION OF VARIABLE CORRELATION



APPENDIX VI

BANK SIZE OF UNIVERSAL BANKS IN GHANA (2009 – 2018)

