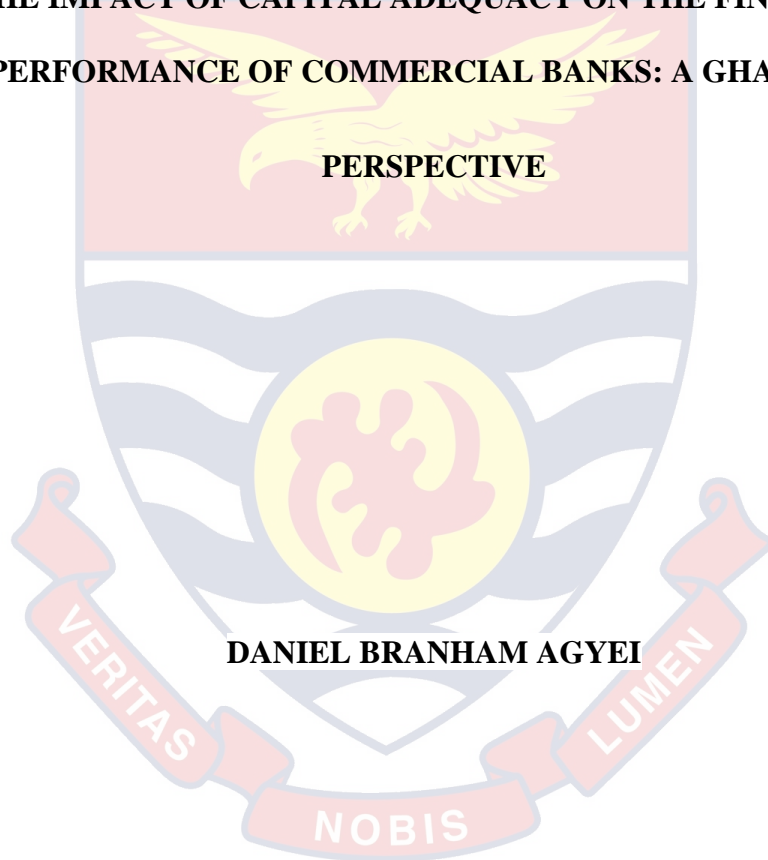


CHRISTIAN SERVICE UNIVERSITY COLLEGE

THE IMPACT OF CAPITAL ADEQUACY ON THE FINANCIAL
PERFORMANCE OF COMMERCIAL BANKS: A GHANAIAN
PERSPECTIVE



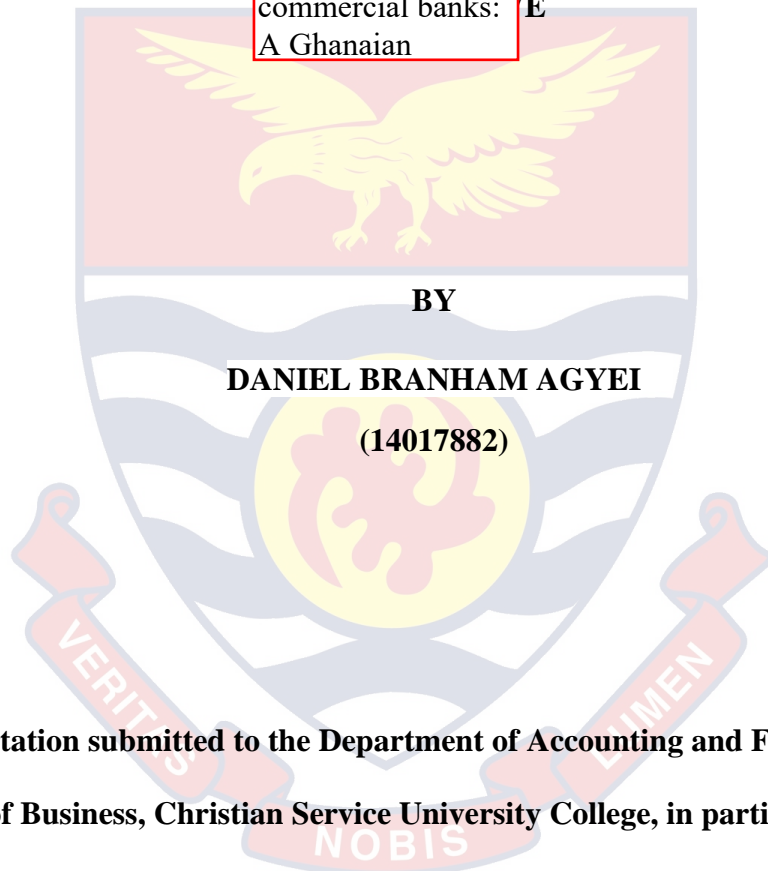
DANIEL BRANHAM AGYEI

JUNE, 2018

CHRISTIAN SERVICE UNIVERSITY COLLEGE

THE IMPACT OF CAPITAL ADEQUACY ON THE FINANCIAL
PERFORMANCE OF COMMERCIAL BANKS: A GHANAIAN
STUDY

This study is about
the impact of
capital adequacy on
financial
performance on of
commercial banks: A
Ghanaian



BY

DANIEL BRANHAM AGYEI

(14017882)

Dissertation submitted to the Department of Accounting and Finance, of the
School of Business, Christian Service University College, in partial fulfillment of
the requirements for the award of the Master of Science Degree in Accounting
and Finance

JUNE 2018

DECLARATION

Candidate's Declaration

I hereby declare that this dissertation is the result of my own original research and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature Date

Daniel Branham Agyei
(Student)

Supervisor's Declaration

I hereby declare that the preparation and presentation of the dissertation were supervised in accordance with the guidelines on supervision of dissertation laid down by the Christian Service University College.

Supervisor's Signature Date

Mr. Clement Oppong
(Supervisor)

ABSTRACT

This study is about the impact of capital adequacy on financial performance on of commercial banks: A Ghanaian perspective. The study sought to investigate the impact of capital adequacy on the financial performance of commercial banks. Nine banks were selected for five years (2013 to 2017). Capital adequacy is among the most regulated aspects in the banking industry in the world. The three major Basel Accord as international standard of capital adequacy recognize worldwide and it is the best for the banking industry. The key concern is that all the financial institutions must have enough capital to meet its obligations. This study adopted descriptive and panel data methodology and the population was the 35 commercial banks from which 9 listed on the Ghana Stock Exchange (GSE) were selected. Secondary data was collected from audited financial statements and the Banking Sector Reports for the period under review. Stata 14 Statistical Software was used for the analysis. The study concluded that capital adequacy (CAR) had a negative and significant relationship on Return on Asset (ROA) and Return on Equity (ROE). Likewise, capital adequacy ratio (CAR) also had an adverse impact on the Total Deposits (TD) of the selected commercial banks. The empirical study showed that capital adequacy requirement was a move by regulators to protect the sovereignty of depositors and the continual existence of the banks rather than improving upon performance. The study further recommended that other indicators of performance such as risk and macro-economic indicators be looked at as a way of positively impacting on the performance of banks in Ghana.

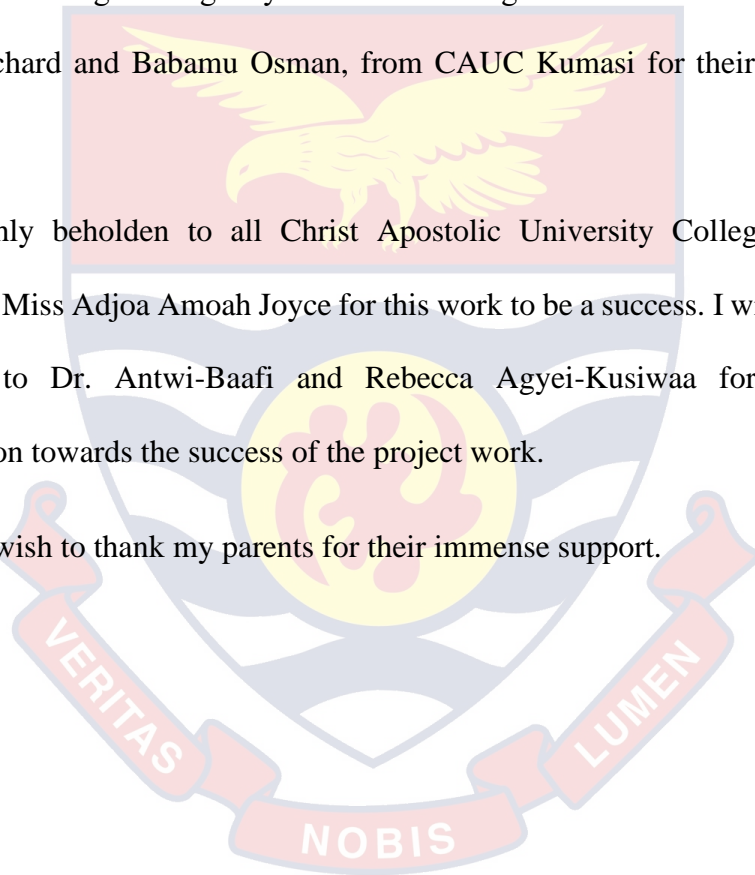
ACKNOWLEDGEMENT

It is a pleasure to acknowledge my indebtedness to all those who in diverse ways contributed directly and indirectly to the conduction of this research.

My special, sincere heartfelt appreciation and gratitude goes to my supervisor Mr. Clement Oppong of the Department of Accounting and Finance, for his insightful comments and professional guidance offered to me “Sir, I am most grateful to you for the pains taken to go through my work”. I am also grateful to Mr. Kumi Joshua, Owusu-Ansah Richard and Babamu Osman, from CAUC Kumasi for their suggestions and support.

I am highly beholden to all Christ Apostolic University College (CAUC) staff especially Miss Adjoa Amoah Joyce for this work to be a success. I wish to express my gratitude to Dr. Antwi-Baafi and Rebecca Agyei-Kusiwaa for their immense contribution towards the success of the project work.

Finally, I wish to thank my parents for their immense support.



DEDICATION

To my loving parents, Mr. and Mrs. Agyei, through whose sweat and hard knocks I learned to read and write. Again, to Joycelyn Gyabaa, Blankson Betty and my entire family for their continual encouragement and support. Finally, to all those whose prayer have made me what I am.



LIST OF ABBREVIATIONS

CIB – CHARTERED INSTITUTE OF BANKERS

NIB – NATIONAL INVESTMENT BANK

SCB – STANDARD CHARTERED BANK

SG – SOCIETE GENERALE BANK

CAR – CAPITAL ADEQUECY RATIO

ROA – RETURN ON ASSETS

ROE – RETURN ON EQUITY

M&M – MOLDIGLIANI AND MILLER

LLP – LOAN LOSS PROVISION

GSE – GHANA STOCK EXCHANGE

BOG – BANK OF GHANA

GAB – GHANA ASSOCIATION OF BANKERS

ATA – AVERAGE TOTAL ASSETS

NPL – NON-PERFORMING LOANS

TD – TOTAL DEPOSITS

NIITA – NET INTEREST INCOME/TOTAL ASSETS

AQ – ASSET QUALITY



TABLE OF CONTENTS

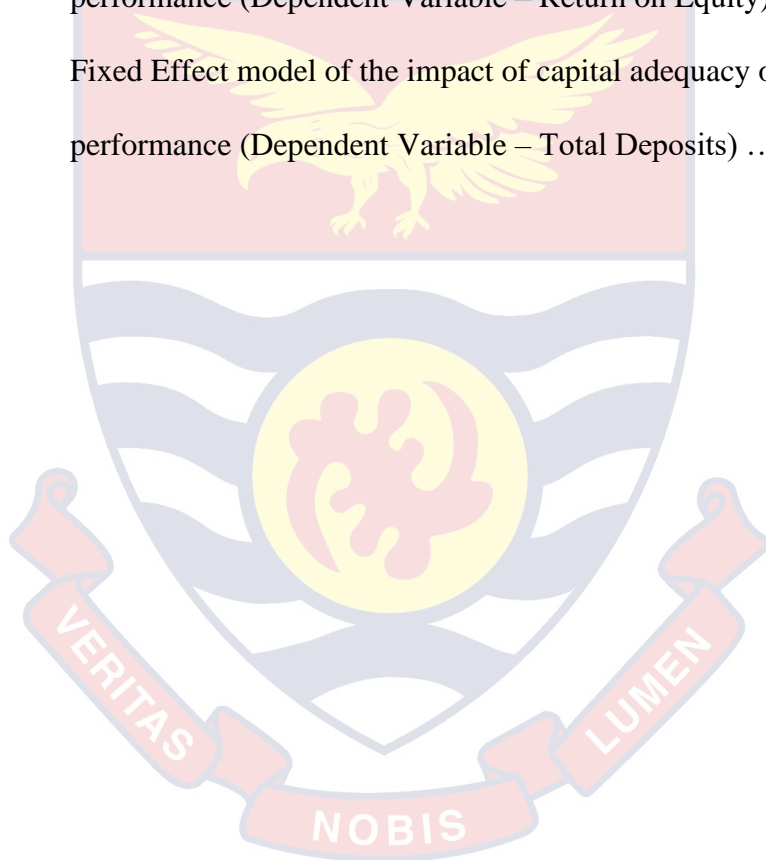
Contents	Pages
Declaration	i
Abstract	ii
Acknowledgment	iii
Dedication	iv
List of Abbreviations	v
Table of Contents	vi
List of Tables	ix
CHAPTER ONE: GENERAL INTRODUCTION	1
1.1 Background of the Study	1
1.2 Problem Statement	3
1.3 Research Objectives	5
1.3.1 Specific Objectives	5
1.4 Research Questions	5
1.5 Significance of the Study	6
1.6 Delimitation of the Study	7
1.7 Organisation of the Study	7
CHAPTER TWO: LITERATURE REVIEW	9
2.1 Introduction	9
2.2 Theoretical Review	9
2.2.1 Capital Structure Theory	9
2.2.2 Pecking Order Theory	11
2.2.3 Agency Theory	13
2.2.4 Static Trade-off Theory	14
2.2.5 Signaling Theory	16
2.2.6 Organizational Portfolio Theory	16

2.3 Capital Adequacy Requirement	17
2.3.1 Reasons for Capital Regulation	21
2.4 Determinants of Financial Performance for Commercial Banks	23
2.4.1 Capital Adequacy	23
2.4.2 Asset Quality	24
2.4.3 Management Quality	25
2.4.4 Liquidity	26
2.4.5 Size of the Bank	26
2.5 Empirical Review	27
2.5.1 Arguments for Capital Adequacy Regulation	29
2.5.2 Capital Adequacy and Performance of Banks, a Global Perspective	30
CHAPTER THREE: RESEARCH METHODOLOGY	31
3.1 Introduction	31
3.2 Research Design	31
3.3 Population and Sample	32
3.4 Data Collection	32
3.5 Data Analysis and Model Specification	32
3.5.1 Definition of variables	34
3.6 Model Specification	35

CHAPTER FOUR: DATA ANALYSIS AND PRESENTATION	
OF FINDINGS	37
4.1 Introduction	37
4.2 Descriptive Analysis	37
4.3 Correlation Analysis	39
4.4 Regression Result	41
4.4.1 Impact of Capital Adequacy on Performance – Return on Assets (Objective 1)	41
4.4.2 Impact of Capital Adequacy on Performance – Return on Equity (Objective 2)	43
4.4.3 Impact of Capital Adequacy on Total Deposits (Objective 3)	44
CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION	47
5.1 Introduction	47
5.2 Summary of Findings	47
5.3 Conclusion	49
5.4 Recommendation	50
REFERENCES	52
APPENDICES	62

LIST OF TABLES

Table 4.1	Descriptive	38
Table of 4.2	Correlation between the variables in the banking industry	40
Table 4.3	Fixed Effect model of the impact of capital adequacy on financial performance (Dependent Variable – Return on Assets)	42
Table 4.4	Fixed Effect model of the impact of capital adequacy on financial performance (Dependent Variable – Return on Equity)	43
Table 4.5	Fixed Effect model of the impact of capital adequacy on financial performance (Dependent Variable – Total Deposits)	45



CHAPTER ONE

GENERAL INTRODUCTION

1.1 Background of the Study

Capital adequacy is a considerable amount of funds, which a financial institution has mobilized and plan to maintain in order to operate effectively in a prudent manner (Pandey, 2005). It is therefore regarded as the amount of capital that can effectively discharge the primary function of preventing banking industries' failure by absorbing losses (Ghosh, 2013). It is considered a means to provide maximum protection against insolvency resulting from risk in the banking sector. This is the least necessary amount to inspire and maintain the confidence of banks, keep it open and make it operational so that time and profits can absorb losses without being forced to costly liquidation while allowing the banking sector to take advantage of maximum lucrative growth opportunities. (Akintoye & Somoye, 2008).

Ebhodaghe (1991) defines capital adequacy as a situation where the adjusted capital is adequate to absorb all losses and cover fixed assets of the bank leaving a comfortable surplus for the current operation and future expansion. Functionally, sufficient capital is considered to be the amount of capital that can effectively fulfill the basic function of preventing failure in the bank by absorbing losses. On the other hand, the measurement of capital for adequacy purposes is determined by a number of factors (both internal and external) that influence the level of risk posed by the operation. Furthermore, the level of capital considered appropriate at a given point in time may need to be adjusted over time as the risk characteristics of the competition, the markets and the economic conditions in which the bank operates change. The Basel Accord (1988) as an international standard of capital adequacy recognized the ratio of capital

funds to deposit and has informed the adoption of a rule of thumb that a bank should have capital funds equal to at least 10% of its deposit liabilities.

The minimum risk-based standard for capital adequacy set by Basel Accord stipulates that tier 1 and tier 2 must both be 8% of its risk-weighted assets of which the core capital element should be at least 4.5%. Oftentimes a bank statutory capital is considered as adequate if it is enough to cover the bank's operational expenses, satisfy customers' withdrawal needs and protect depositors against the total or partial loss of deposits in the event of liquidation or losses sustained by the bank (Okelo, 2015; Crosse & Hamsel, 1980). Crosse & Hamsel (1980) are of the view that capital has to do with the bank's ability to generate income and a means for expanding its operations, deliver quality service and hence remain competitive. This, no doubt, is critical to income generation as the growth of the balance sheet is not possible without adequate capital, (Greuing & Bratanovic, 1993; Crosse & Hamsel, 1980). Capital adequacy is also an important indicator of the strength of a bank. The best management cannot turn around an ailing financial institution if it does not have adequate capital.

The capital adequacy requirement of the banks is to ensure that banks hold sufficient resources to absorb shocks to their balance sheets. It is designed to assess the solvency of banks. In lieu of guarding against insolvency, the Bank of Ghana in September, 2017 came with a new minimum capital requirement of GHC400 million which will enhance the buffer for protecting depositors' interest of GHC120 million as declared by the Central Bank in 2012. The requirement protects the bank depositors and lenders and also maintains confidence in the banking system. It is used to measure leverage and assess whether the banks are prepared to take a greater risk. The higher the capital adequacy ratio, the lower the leverage.

Financial performance, on the other hand, shows the efficient use of resources and the ability of firms to generate profits. This is an important consideration for interested parties (depositors, creditors, shareholders, government, executives). It further depicts how effectively depositor's funds are managed to generate profitable returns. For creditors, it shows the bank's ability to meet its obligations to them. For the state, financial performance is an indicator of the bank's ability to pay taxes. For shareholders, the financial return is the return on the funds invested. For executives, financial performance shows the value of the effort and the human capital invested.

1.2 Problem Statement

According to Ebhodaghe (1996), capital inadequacy is a strong indicator of distress situation in any business. It is a big problem that has affected and continues to pose a major challenge to the Ghanaian banking system in the past years before recapitalization policy was established by the central bank. Inadequate capital reduces the ability of the banks to absorb the losses that are accruing in business undertakings due to changes in the economic environment such as inflationary measures leading to deterioration in asset quality. The problem is sometimes the compounded huge amount of non-performing loans which leads to the erosion of the bank's capital base.

In Ghana, it is the central bank that generally determines the level of capital adequacy of banks, although it varies. This ensures that the banks maintain adequate capital to improve the effectiveness of the system by strictly adhering to regulations that have been enacted for them. Capital adequacy performs many functions in the banking system as a determinant of banking performance. In other words, the capital serves as a buffer for absorbing operational losses. It creates shareholder trust in the bank and exposes its ability to finance long-term projects and capital expenditures. In summary,

the existence of sufficient and adequate capital also helps to minimize the risk faced by depositors.

The issue of capital adequacy is of immense cardinality because it is a fundamental pillar of the financial strength of any bank. It supports banking operations by providing a buffer to absorb unexpected losses from its operations and, in the event of a problem, allowing the bank to continue to operate in a sound and feasible manner until problems are resolved. The maintenance of sufficient capital reserves by a bank can engender confidence in the bank's financial strength and stability by providing a consistent guarantee that it will honor its obligations to depositors and creditors.

Since Modigliani and Miller (1958) came out with their theory on capital adequacy and its structure, many researchers in finance carried out several studies on the relationship between capital structure and firms' performance. However, most of these studies were conducted in developed countries where economic conditions are relatively stable such as the United States and Britain. In Ghana, where the business climate is relatively unstable, researchers in both finance and academia have carried out various studies on capital adequacy and performance to ascertain if their findings will be consistent with those firms in the developed countries. For instance, (Agha, 2014; Owusu, 2014; Amponsah, 2013) on some listed firms in Ghana as well as (Akoto & Awunyo-Vitor, 2013; Abor, 2005) and also on firms in the banking industry in Ghana (Amidu, 2007, Gatsi & Akoto 2010).

Studies have already been conducted on capital and structure of some firms in the service industry in Ghana, (see: Addae et al., 2013; Dery et al., 2017) and there still exists a research gap on why most banks are not been able to meet the set requirement by the regulatory authorities. Is the capital adequacy requirement too high for these

banks? Do these banks operate with little funds as a result of the increase in the minimum capital directive and hence affect their profitability performance? What has been the impact on financial performance since Bank of Ghana (BoG) rolled out the new minimum capital directive of GH¢400 million in September 2017 on banks?

The study, therefore, sought to ascertain the impact of capital adequacy on financial performance on commercial banks in Ghana.

1.3 Research Objectives

The general objective of this study was to investigate the impact of capital adequacy on the financial performance of commercial banks.

1.3.1 Specific Objectives

The specific objectives of the study included;

1. to determine the relationship between capital adequacy and return on assets of selected commercial banks.
2. to determine the relationship between capital adequacy and return on equity of selected commercial banks.
3. to determine the relationship between capital adequacy and total deposits of the selected commercial banks.

1.4 Research Questions

1. what is the relationship between capital adequacy and return on assets of selected commercial banks?

2. what is the relationship between capital adequacy and return on equity of selected commercial banks in Ghana?
3. is there a relationship existing between capital adequacy and total deposits of the selected commercial banks?

1.5 Significance of the Study

The study would serve as an avenue that would sensitize financial institutions of the concept of capital adequacy on the financial performance of commercial banks and how beneficial it is to public and private financial institutions.

Also, data collected and obtained during the study would be beneficial to various learning institutions especially the Chartered Institute of Bankers (CIB) and other financial institutions officers acting as a centre of acquiring knowledge on capital adequacy and its impacts on financial performance. The study is also expected to inform decision makers such as the government through the Bank of Ghana and multilateral donors such as the World Bank, African Development Bank, European Investment Bank, among others in reviewing existing policy, laws and regulations components for the efficient performance of making reformed programs more effective in fostering broad-based development.

Finally, it would also add to the knowledge of existing literature. It is also hoped that the output of this research would confirm or refute the existing knowledge about the impact of capital adequacy on financial performance.

1.6 Delimitation of the Study

The study was limited to nine (9) listed banks on the Ghana Stock Exchange. The study was designed to analyze the annual financial reports of all the selected listed banks. These banks were selected because as at the time of the study, they were almost about reaching the new minimum capital directive with the exception of Ecobank and Barclays which had already satisfied the requirement. They are Access Bank, Ecobank, Barclays Bank, Stanbic Bank, Agriculture Development Bank (ADB), National Investment Bank (NIB), Standard Chartered Bank (SCB), Société Générale (SG Bank) and GCB Bank for the period of 2013 to 2017. A period of five (5) years was adopted so as to clearly depict the impact the new minimum capital directive is having on the performance of the selected banks.

1.7 Organisation of the Study

The study is structured into five main chapters:

Chapter one: This is the introductory chapter as it captures the background of the study, the problem statement, research objectives, research questions, significance, delimitation, and organisation of the study.

Chapter two: This chapter examined the relevant theoretical and empirical literature on the impact of capital adequacy on the financial performance of commercial banks listed on the Ghana Stock Exchange and other carefully selected subtopics relevant to the research.

Chapter three: This chapter looks at how the study is going to be conducted by looking at the research methodology. It provides details about the data, sample, and population.

It also introduces detailed methods of data collection and explained the concepts of statistical tests.

Chapter four: This section considers the analysis, interpretation, and discussion of the data collected.

Chapter five: This is the final chapter which provides a summary of the findings, conclusions, recommendations, and areas for further research.



CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The subject of capital adequacy continues to enjoy a form of attraction in all the facets of academia as well as the financial sector of the economy. Nonetheless, the chapter was dedicated to the review of other writings, journals, and literature which had a salient link to the subject matter. Hence, both theoretical and empirical works of literature were ardently discussed. Also, other carefully selected subheadings which brought an in-depth insight to the topic were outlined and discussed.

2.2 Theoretical Review

This section covers the theoretical underpinnings that the study is based on. It establishes divergent theories from which the study is rooted.

2.2.1 Capital Structure Theory

Capital structure has long been an interesting research area of finance. However, it has not reached a compromise. Finance still lacks a comprehensive theory that will explain how companies should set their capital base to make it adequate. The famous Miller and Modigliani theory only affirms that dividend and financing decisions have no influence on a firms' value under a perfect market condition, but this theory is flawed because it focused only on the effect of capital structure on firm value rather than explaining what makes the capital adequate for each firm.

The Modigliani-Miller irrelevance theorem (M & M theory, 1958) is the base for all other theories on capital. The theory avers that a firm financing decision has no

significant effect on its value, that it is irrelevant. This could mean that the value of the firm is determined by the income generated by its asset's composition (return on assets), and not by how the assets are being financed (return on equity) or how the income from the asset utilisation is derived.

Myers & Majluf, 1984 and Abor, 2008 claim this theory could only be applicable in the perfect world, that is, where there is asymmetry information, no taxation, no bankruptcy costs, no transaction costs, where there is equivalence in borrowing cost for companies and investors, no agency costs and no effect of debt on firm earnings and lots more. These factors afore-mentioned are the various factors that banks and firms trade on. The theorem is considered inapplicable to a country like Ghana and some other developing economies where the imperfect market condition exists. This prompted the improvement on the theory in 1963 and some other theories to consider corporate taxes with the intention to enjoy tax shields. Also, the static trade-off theory incorporates the influence of tax and the benefits of tax shield against bankruptcy costs among others. These are evident on the bases of free tax zones and other corporate social responsibilities that warrant for the enjoyment of tax exemptions in Ghana. Moreover, banks are very special firms, in that they are the only financial institution that serves as an intermediary between the surplus and the deficit unit of an economy and it is commonly known for the receipt and issue of deposit. The study will take a critical look on how some capital regulations can impact on depositors interest. What structure of capital they hold as an institution determines whether their cost of capital falls and its value increase with an accepted level of debt financing or experience an increase in the cost of capital by holding a larger equity based capital structure and thereby decrease in the value of the business (Ezra, 1963). The study made use of both

blends of financing a business to estimate the impact minimum capital directives have on financing a firm by debt or through shareholding funds.

Furthermore, the work of Modigliani and Miller lead to this theory. Again, this trade-off theory goes as far back as 1973, when Kraus and Litzenberger (1973) developed their model on optimal financial leverage. Since that time many researchers have conducted extensive research on this theory, notable among them are Scott (1976) and Copeland and Weston (1988) and Kim (1978). The trade-off theory tried to address some of the imperfections and unrealistic assumptions made by Modigliani and Miller in both M&M 1&2. According to Kraus and Litzenberger (1973), optimal capital adequacy arrangement is based on striking a balance between the tax benefits of debt and the costs associated with the debt such as bankruptcy and agency cost.

According to the trade-off framework, firms set a target debt-to-value ratio and gradually move towards it, in much the same way that a firm adjusts dividends to move towards a target payout ratio (Myers, 1984,). Consequently, of all the controversies that surround this theory, many studies also support this framework such as Hovakimian, Opler & Titman (2001), Fama & French (2002) Gaud, Jani, Hoesli, & Bender (2005), Smith & Watts (1992), Byoun & Rhim (2003). These studies propose that firms move towards their target ratio over the long run or the short term and the target debt ratio and actual debt ratio is an important aspect to take into consideration.

2.2.2 Pecking Order Theory

Unlike the trade-off theory, the pecking order theory does not assume an optimal level of capital adequacy structure. As previously indicated, Myers & Majluf (1984) favor the pecking order theory, which incorporates the assumptions of information asymmetries and transaction costs. This pecking order theory, therefore, suggests that

firms should follow a financing hierarchy in order to minimize information asymmetry between parties. The continuity of a business and how its stakeholders are protected form part of the reasons why regulators set regulations to protect the interest of these stakeholders. If regulators do not intervene, those charge with governance will pursue an unbalanced capital structure which will be to the advantage of the agents of company rather than shareholders and other stakeholders. According to one study, managers of companies have access to vital internal financial information by virtue of their work than investors, Berk & DeMarzo (2012). This power they have can cause them to mislead the investors to believe in the wrong prospect of firm development and as such investors may not be able to access the fair value of the new securities issued by the company.

Ross (1977) came up with a model that explained the choice of capital structure mix used by the readiness of a firm to send signals about its quality. The principal idea of Ross (1977) implied it is too costly for low-quality firms to abuse the market and send signals about its high quality by issuing more debt. Moreover, by so doing, low-quality firms may have a low amount of debt, and that leverage increase was tantamount to an increase in the value of a firm. A similar model was developed by Leland and Pyle (1977), according to them the higher the quality of a project a manager wants to invest in, the higher the willingness of the manager to attract financing. Hence risky firms will end up with lower levels of debt. Hillier (2010) argues that investors regard the announcement of a stock issue as a signal of change in stock price: managers issue new stock when the stock price is over-priced, while managers use retained earnings when the stock price is underpriced.

It also stated that companies prioritized their sources of financing, from internal financing to equity financing, according to the principle of least effort or of least

resistance, preferring to raise equity as a financing means of last resort. So, the pecking order theory claims that internal funds are used first and only when all internal finances have been depleted, do firms opt for debt. When it is not sensible to issue any more debt, they will eventually turn to equity as a last financing resource. In summary, the theory predicts that more profitable firms that generate high cash flows are expected to use less debt capital than those who generate lower cash flows. The pecking order theory argues that businesses adhere to a hierarchy of financing sources and prefer internal financing when available. However, when external financing is required, firms prefer debt over equity. Equity entails the issuance of additional shares of a company, which generally brings a higher level of external ownership into the company. Hence, the form of debt that a firm chooses can act as a signal for its need for external finance. Thus firms that are profitable and generate high cash flows are expected to use less debt compared to those who do not generate high cash flows. This theory, therefore, suggests that firms prefer debt to equity. (Muritala, 2012)

All of the previously mentioned mechanisms suggest that the pecking order theory claims a negative relationship between capital structure and firm performance since more profitable firms opt to use internal financing over debt.

2.2.3 Agency Theory

The next important theory mentioned in the literature is the agency cost theory. Jensen and Meckling developed this theory in their 1976 publications, and Myers (1977). Agency cost arises as a result of the difference in the interest of shareholders, managers, and creditors, all these agents have different interest and they will all try to ensure that their interest is realized even if it bothers the other agent in most cases. This theory considered debt to be a necessary factor that creates conflict between equity holders and managers. Jensen and Meckling recommended that, given increasing agency costs

with both the equity-holders and debt-holders, there would be an optimum combination of outside debt and equity to reduce total agency costs.

Research made by Fama, Miller, Jensen (1976) observed the agency cost model. It states that capital structure is determined by its agency cost. They found two types of problems that create agency theory; those conflict between firm managers and shareholders as well as the conflict between debt holders and shareholders.

2.2.4 Static Trade-off Theory

The static trade-off theory explained that a firm's decision for getting to its optimal capital structure is related to the trade-off between the tax advantage of debt and several leverage-related costs (Bradley, Jarrell, & Kim, 1984; Hillier et al., 2011). Financial distress forms an integral part of these leverage-related costs. The assumption from the static trade-off theory herein is that firms with a greater risk of experiencing financial distress tend to borrow less than firms having lower financial distress risk.

Further, financial distress costs are not the same for each firm, since these costs depend primarily on a firm's assets. These financial distress costs will be determined by how easily ownership of the firm's assets can be transferred. Also, the static trade-off theory assumes that next to costs, benefits from debt can be obtained. The advantages of using debt are that the problem of having free cash flow is reduced and also interest payments might be deductible from tax (López-Gracia & Sogorb-Mira, 2008). Therefore, a tax benefit from debt can be obtained. Moreover, the higher the tax rate, the greater the incentive to borrow (Hillier et al., 2011; Shyam-Sunder & Myers, 1999). This static trade-off theory has dominated thinking about the capital structure for a long time, however, it has some shortcomings. Perhaps the main shortcoming is that many large, financially sophisticated and highly profitable firms make little use of debt in their

financing. This is in contrast with the static-trade-off theory which assumes that these firms use relatively most debt. The thinking behind it from the static trade-off theory is that these firms face little risk of going bankrupt and there are high tax advantages from the tax shield to be obtained (Bowen, Daley, & Huber, 1982). The possible presence of the static trade-off theory in capital structure decisions of Dutch listed firms will be further investigated by making use of often used firm-specific determinants and these will be linked to a measure of leverage: debt-to-capital ratio. For analyzing the possible presence of the static trade-off theory, the determinants 'Non-debt tax shields and Business risk' will be used. The determinant 'Non-debt tax shield' literature on the static trade-off theory assumes a negative relationship with debt. The reasoning behind the negative relationship between the non-debt tax shield and the debt-to-capital ratio is that tax deductions on for example depreciation and tax credits are assumed to be substitutes for the tax benefits to be gained from debt financing (Titman & Wessels, 1988).

Therefore, firms having large non-debt tax shields compared to their expected cash flows make less use of debt in their capital structure. Especially the determinant non-debt tax shield is assumed to play a big role in capital structure decisions made by Dutch firms. This holds for both short-term and long-term leverage (Chen & Jiang, 2001). The other determinant specifically focusing on the static trade-off theory that will be researched is 'Business risk'. This determinant is also known as the cost of financial distress. As mentioned, firms experiencing a greater risk of financial distress tend to borrow less than firms with a lower risk of financial distress. The static trade-off theory implies that firms should balance tax advantages to be gained from debt with the costs of financial distress (earnings volatility, bankruptcy costs) (Hillier et al., 2011).

2.2.5 Signaling Theory

Another capital structure theory is the signaling theory which can be best explained by the use of two hypotheses; information asymmetry hypothesis and the implied cash flow hypothesis, Myers & Majluf (1984) assumed that the firm's managers have superior information about the true value of the company. If management has favourable information that is not yet reflected in market prices, the release of such information will cause a larger increase in stock than in bond prices. Secondly, another signaling theory hypothesis is implied cash flow hypothesis which is premised on the idea that managers know more than investors do. It claims that financing decisions are designed primarily to communicate management's confidence in the firm's prospects and, in cases where management thinks the firm is undervalued, to increase the value of the shares.

2.2.6 Organizational Portfolio Theory

Organizational portfolio theory postulates that instances of poor firm performance often lead to executive directors on the board being replaced by more independent non-executive directors. Such changes typically decrease the amount of trust and discretion granted to executives, based upon the assumption that the decline in profitability is a result of their poor management of the firm (Westphal, 1997). In turn, organizational portfolio theory also predicts that an increase in organizational profitability enhances the perceived integrity and competence of managers (Mayer, Davis and Schoorman, 1995), thereby precipitating boards in which managers are increasingly represented.

The way in which portfolio factors interact to determine changes in firm performance and thus board composition will now be discussed. Organizational portfolio theory identifies factors that are likely to prevent the sub-satisfying instances of performance

and so forestall calls for a tougher and more independent board. These include diversification, divisionalization, and divestment.

2.3 Capital Adequacy Requirement

Initially, Modigliani and Miller (1958) illustrated that a firm's capital structure is irrelevant to its value in an efficient market. As banks are joint-stock corporations, the shareholders' losses are limited while their gains are much larger than the fixed amount of interest payment for depositors and creditors. In an efficient market with all information published, creditors require higher loan interest to cover the higher risk, which forces managers to maximize both share value and bank total value. Hence, the market value of the bank is independent of its capital structure. In other words, there is no need for capital regulation in this framework.

However, Sealey (1985), Baltensperger & Milde (1987) argued that the M&M theorem is not appropriate for banks. According to the information theory, if the market was efficient, banks that do not possess special information would not exist. Therefore, the bank's appearance proves that M&M's assumptions have problems. Since creditors are unable to accurately assess the portfolio's risks, banks have incentives to increase leverage and take higher risks. As a result, regulators should implement certain requirements for banks, especially in terms of capital, to avoid default.

In addition, Koehn & Santomero (1980) found that capital requirement was not enough to reduce the failure probability. Because a high required capital level would have undesirable effects on banks' expected returns; forcing banks to balance their loss by investing in high-risk assets. In other words, the degree of risk aversion played a key role in bankruptcy probability. Researchers indicated that the failure's probability was

lower for sufficiently risk-averse banks and higher for low risk-averse banks. Consequently, capital regulations need to combine with asset requirements and take into account the liquidity problem.

In the later discussion, Kim and Santomero (1988) also suggested that policymakers might implement risk-sensitive capital requirements. Specifically, optimally chosen risk-weights with an upper bound on the bankruptcy's probability should depend on the expected returns and their variance-covariance structure. Hence, they were independent of individual risk aversion.

Mpuga (2002) believed that inadequate minimum capital requirements might induce banks from going bankrupt. He analyzed how new Ugandan capital regulations led to a large number of banks collapse when they took efforts to meet capital requirements in the 1998 crises. The research empirically further concluded that once new regulations took additional elements, such as deposits, paid-in capital, core capital, total capital, etc. into account, banks' performance would be strengthened. Similarly, Choi (2000) found that banks changed their behaviors when an old regulation was replaced. In particular, banks satisfying CAR extended their credit and low-CAR banks had to reduce their lending to adapt to mandatory capital.

Back to the deposit insurance point, as a matter of fact, that assets' risk cannot be reflected in the deposit-rate demanded by lenders; banks have the tendency to raise the riskiness of their portfolios. In order to deal with this issue, researchers developed various methods, one of which is the Black and Scholes formula (1973) in option pricing, conducted by Merton (1977) and Pyle (1984). They assumed the deposit insurer as a put option and the predetermined payment to depositors as the strike price. In the case of deposit insurance being underpriced, banks seek to maximize their equity and

option value of deposit insurance simultaneously. Besides, Merton believed that deposit insurance influences the risk-shifting process, which requires shareholders to post a bond in the form of suitable levels of capital.

Dowd (1999) proved that minimum capital regulations might be considered as a means to enhance the safety and soundness of the banking industry. He appreciated the deposit insurance system to deal with information asymmetry. Its moral hazard made the Government establish intervention in bank performance by capital regulations. At the same time, Harold (1999) independently found that not only regulators but also residents concerned about the stabilization of the financial system. Also by using the bank risk-based capital approach for banks and credit unions strength comparison, the researchers inferred that asset size was not the main source causing the difference in these bank risk-based capital ratios. Therefore, banks would maintain an appropriate capital level to optimize the return on equity as well as to adapt capital adequacy regulations.

Jackson et al. (1999) conducted a study to verify the relationship between banks' profitability and capital requirement in the banking sector of Germany, Canada, Holland, Japan, England, the United States, and Switzerland. However, the authors found inconclusively divergent results from their data.

Bensaid (1995) profoundly examined the function of capital requirements in dealing with both adverse selection and moral hazard. Theoretically, the former derived from the private quality of the bank's loans towards banks' owners while the latter arose as banks' profit depending on the unobservable decision.

Furlong and Keeley (1989) argued that the framework in which borrowing rates are constant and costs are independent of portfolio risk is incorrect because it ignores the

states in which bank fails. Once a bank fails, depositors are paid deposit insurance agencies' compensation, decreasing the cost of debts. Therefore, the probability of banks to take more risk is greater at low capital levels, and it decreases with the increase in capital.

Under a financial perspective, Blose (2001) analyzed the influences of loan loss provision (LLP) on stock price during the period from 1980 to 1993. He explained investors' reactions from the LLP announcement in terms of information asymmetry on asset value and cost of capital. The regression on cumulative average expected earnings indicated that the LLP declaration brought negative effects on earnings. Thus, banks with lower capital adequacy faced a larger reduction in the stock price in comparison to the ones with adequate CAR. Eventually, of plentiful types of LLP, real estate and loan provision made an enormously negative price reaction. Whilst, Powel (2002) believed that there was a shortage of provisioning capital rules in the international agreement of Basel I, which cover both expected and unexpected losses.

In research of financial structure and bank performance, Renolds (2000) found the structural variables by regressing independent financial ratios including liquidity, profitability, and loan preference. The study explored a positive relationship between banks' size and profitability, and a negative correlation of capital adequacy and banks' assets. In other words, larger banks would remain a small amount of capital buffer that is directly affected by profits.

Yu (2000) was also in favor of too big to fail theory, reporting that most large banks have a much lower capital ratio in comparison to small banks, in the Taiwanese sample. Basing on the assumption that well capitalization would earn a high profit, the paper found that equity to asset ratio positively related to small banks but negatively related

to medium-size banks. He also concluded that bank assets, liquidity, and profitability are the main determinants of capital ratio.

Asarkaya and Ozcan (2007) considered the determinants of Turkish banks' capital structure, explaining the reasons why banks held a higher amount of required capital during the period 2002 – 2006. Through an empirical model, the study suggested that lagged capital, economic growth, portfolio risk, and return on equity positively related to capital adequacy ratio whereas deposits negatively affected capital buffer.

Newman (2010) considered that the variation in foreign exchange earnings was the main reason which generates a decrease in the dollar and foreign reserves, which remarkably affected bank capital. Marcus (1983) assumed that fluctuation in the nominal interest rate caused changes in capital to assets ratio. Through time series – cross estimation, he showed a significant reduction in this ratio in US banking during the last two decades.

In efforts to define an adequate bank leverage amount in Hungary and Bulgaria, Bevan (2000) paid attention to bank size, risky assets, debts, and retained earnings effects. The study resulted in an inverse correlation between leverage and risky assets, debts, which emphasized the importance of capital in securing the depositors' fund.

2.3.1 Reasons for Capital Regulation

Over the years, establishing the capital ratio has been a contentious issue in the banking sector as to how much minimum capital banks should keep. The reasons for this controversy focus on two things, first and foremost: the question of who should determine the capital requirement for banks. The most common question is whether it is the market or regulatory authorities. Second, what should be the minimum reasonable standard for bank capital. Banks' capital requirement has been strictly regulated for

decades. Minimum capital requirements have been one of the major requirements of banks and must have at least the minimum level of capital required throughout its operations, as provided by the regulatory authorities. As identified by Wall (1985), supervisors purposely regulate bank capital so as to minimize banks failure, stabilize the public confidence in banking services and limit losses accruing to the federal government through deposit insurance claims because there has been an underlying assumption that private market place will not be able to accomplish all those aforementioned objectives simultaneously because financial market shifts banks failure on the activities of the banking systems and not to the financial market.

Banks are unique and flexible in their activities in that they trade with short term liabilities commonly known as demand deposits which can be withdrawn by depositors immediately, they lose confidence in the banking activities. It is only a few banks that can instantly liquidate their loan portfolios in times of massive deposit withdrawals. Moreover, most managers of banks do not take into consideration the possibility of the risk taken by them affecting other banks in the industry or neighboring institutions.

Large bank failures are a crucial problem that needs urgent attention. The failure of a big bank is so significant that it attracts public attention and calls into question the soundness of the bank because larger banks have a high proportion of non-deposit liabilities which are not adequately covered by insurance. It is wise for banks to know that the big banks' failure will pose a great effect on the government's deposit insurance funds than the small banks because it lowers the normal level of vigilance among depositors over bank safety and risk tolerance. Most depositors feel fully protected, hence, they refuse to monitor the risk appetite of the bank they use which would have made them raise alarm on any bank taking excessive risk so that they can transfer their funds into other low-risk tolerant banks. This moral-hazard concept of government-

sponsored insurance business encourages banks to maintain a low capital ratio; hence, government insurance funds are exposed to a greater risk of generating losses.

2.4 Determinants of Financial Performance for Commercial Banks

The bank's financial performances are determined by other factors which are unlimited to asset quality, management quality, liquidity as well as bank size.

2.4.1 Capital Adequacy

Capital adequacy is a key determinant of financial performance. According to Muthuva (2009), Capital adequacy is positively related to ROA and ROE. Banks holding adequate capital are perceived as safe by depositors hence attract large deposits. This means adequate resources to support operations hence increased returns. They also benefit from cheap loans since lenders can be convinced to lend at lower rates due to low-risk perception. This definitely leads to a higher spread between advances rate and borrowing rate hence, an improved financial performance (Dagon, 2013). Banks with adequate capital have the advantage of taking huge risk investments with higher returns which they could not if they were operating with debt. This is due to debt covenants which restrict the borrower from financing high-risk projects (Mostafa & Boregodwa, 2014).

According to Olalekan & Adeyinka, (2013) for banks to continue operations without interruptions they need adequate capital. Hence, adequate capital is one of the parameters used by regulators and stakeholders to assess banks' stability. Inadequate capital has been one of the key foundations of financial instability and this has led to the setup of the Basel committee to address issues of capital inadequacy. Again, more than two decades have passed since the Basel Committee was established and three sets

of regulations introduced, Basel I, Basel II and Basel III. Each set anchors on capital adequacy as it is the key determinant of financial performance and stability for banks (Basel Committee on Banking Supervision 2013).

2.4.2 Asset Quality

Asset quality is a key determinant of future earnings and therefore, capital generation or erosion. Bank's asset is loans and they determine a greater percentage of the firm's income hence the quality of the loans is key (Jeanne & Svensson, 2007). Banks' risk profile can be seen through its asset quality. The level of non-performing loans as well as provisions are key determinants of asset quality and they can be used to predict near-term losses which reduce creditor protection. The non-performing ratio is the proportion of loans classified as non-performing against the gross advances. High non-performing loans lead to an increase in the allowance for impairment charges in the bank's profit and loss accounts hence reduce profitability. Low non-performing loans ratio shows a healthy portfolio (Diamond & Rajan, 2001).

Banks' asset quality is a key determinant of bank's financial performance (Whalen 1994). Before a bank is declared bankrupt a sizeable amount of its loans must be non-performing. Banks management has an obligation to evaluate the firm's portfolio with a goal of determining exposure to credit risk. The evaluation risk in the loan book of the firm enables the management to project earnings. Asset quality is of main concern to regulatory authorities since poor asset quality means the troubled banking industry. The importance of asset quality is outlined in the Basel Committee of Banking Supervision in which out of 25 core principles on Banking Supervision 7 aimed at address asset quality and risk management (Basle, 1997). Gross loans, non-performing loans, loss provision and determine asset quality of a bank and adverse movement in them will impact the financial performance of the firm (Adeolu, 2014).

2.4.3 Management Quality

According to Halling and Hayden (2006), management quality and performance are qualitative hence difficult to measure. However, management quality should be determined on the following parameters, experience, and technical competence, leadership skills, integrity and compliance to set regulatory requirements, manager compliance to set internal policies and general attitudes towards risk. Staff quality and the existence of control systems, as well as organizational discipline, are also used to establish management quality. Management compliance to regulatory authority provisions enables the firm to avoid penalties imposed in case of breach and this will lead to a reduction of operating expenses. Managers have an obligation to make decisions which will benefit the bank and translate to financial performance. They are considered as critical assets to the organization hence shareholders that they have quality management whose aim is profit and shareholder wealth maximization. Effective and efficient management leads to competitive advantage hence influencing financial performance (Liargovas & Skandalis, 2008).

Management efficiency can be determined by several financial indicators like total asset growth and earnings growth rate. Management plays a key role in ensuring that a firm's resources are efficiently managed as it has an implication on the financial performance of a firm as reiterated by Athanasoglou et al., (2005). Higher profits indicate efficient and quality management which is able to achieve high results on controlled costs. A high expense incurred due to inefficient cost to operating profit ratio is used to measure efficiency levels. Profitable and financially sound banks operate at lower costs (Bourke, 1989).

2.4.4 Liquidity

Liquidity which is mostly measured by assets classified as the liquid to total assets, as well as bank's advance to deposits, has a positive relation to the bank's profitability (Liargovas & Skanda, 2008). Liquidity shows the firm's position to meet due obligations. It involves a situation whereby a financial institution is able to obtain sufficient funds to meet short term obligations either by raising short term debt or converting existing assets to cash. In their lending activities, financial institutions have to balance between funding long term projects and short term. Short term funding ensures that banks maintain a buffer against liquidity stocks. Banks strive to ensure that liabilities and assets are matched since any mismatch can lead to a bank run (Holmstrom & Tirole, 2000).

Diamond and Rajan (2001) argument are that inadequate liquidity might lead to loss of viable projects. Liquidity crisis might force a bank to obtain high-interest rate loans which will lead to a decline of returns. Adequate liquidity helps banks to increase their lending in case of attractive market opportunities. Banks need to balance between holding too much liquidity and lending needs since much liquidity will mean fewer investments and fewer returns. According to Liargovas & Skanda (2008) holding high liquidity is beneficial for banks as it can be useful to support activities when external finance is unavailable.

2.4.5 Size of the Bank

Firm's size mostly determined by the total asset has been argued as a key determinant of financial performance. Large firms have the capacity to achieve operational efficiency resulting in improved financial performance. Their nature enables them to have market power and can easily access capital markets and raise funds cheaply (Kigen, 2014). The ability to raise funds easily is backed by the perception by lenders

that their safe and bankruptcy chances are lower. The lower chance of bankruptcy anchors on is large firm's capabilities and efficiency in the utilization of their resources and achieves economies of scale. Large banks have the capability to bargain for favorable rates since their risk profile is low as well as set prices for their loan facilities. Large banks have the capacity to lend to capital intensive projects with minimal competition leading to increased returns and improved financial performance (Dogan, 2013).

According to Babalola (2013), bank size is very key in determining its relationship with both internal and external environments. Their operations have an impact on the stakeholders. Larger Banks attract a pool of qualified human capital and have the capacity to achieve strategic diversification of its operations reducing risks and improving performance (Kigen, 2014).

2.5 Empirical Review

Determinants of capital adequacy have been examined in various economies and this study finds it necessary to re-examine the factors in the Ghanaian economy. Dreca (2013), using OLS regression, evaluates this subject matter in Bosnian banks and found that loan, ROA, deposit, size, ROE and leverage significantly influence capital adequacy ratio while loan loss ratio and net interest margin were insignificant. Similarly, Allen, Nilapornkul, and Powell (2013) using mixed factors found profitability, bad loan, and GDP posing negative effects on leverage in Thai banks. Also, in the study of the Turkish banking sector, Buyuksalvarc and Abdioglu (2012) discover the negative effect of loan to asset ratio; Return on Equity and leverage ratio on capital adequacy ratio. While Liquidity ratio and Return on Assets were found to be positive but significant, size, Deposit structure, Liquidity ratio, and NIM have no

significant effect on CAR. Alsabbagh (2004) examines capital adequacy determinants in Jordanian banks and found that most Jordanian banks had adhered to the required Basel I capital accord minimum 8% capital ratio and also revealed that CAR was directly affected by ROA, loan to assets ratio, risky assets ratio and dividends payout ratio of the bank while deposits assets ratio, loan provision ratio and size of bank negatively affect CAR. In 2008, Gropp and Heider use both internal and external factors and found that profitable banks possessed more equity and it was the major determinant of capital in the United States and Europe large banks.

This finding was consistent with the postulations of the pecking order theory. Similarly, Kleff and Weber (2008) aver that the capital level of banks is positively correlated with the profit of banks, therefore, profit accumulation generates a higher level of growth in capital which is contrary to the findings of the study carried out by Aremu, Ekpo, Mustapha, and Adedoyin (2013) on Nigerian banking sector in which they found profitability, growth and banks' risk level to pose significant but indirect relationship with capital level. They also discover the inverse relationship of tangibility and tax charged with capital, but dividend payout and size of the banks were found to be positively and significantly related to their capital. However, Ahmad, Ariff, and Micheal (2008) also confirm in the Malaysian banking sector the negative effect of earnings on their capital ratio. Comparatively, Bokhari and Ali (2009) analyze the capital adequacy determinants of Pakistan banking sectors employing deposits, GDP, portfolio risks and profitability as bank-specific factors affecting the capital ratio. They found that profitability proxied by Return on assets was inversely related to capital ratio but highly significant. However, deposit, portfolio risk, and GDP have a negative but significant effect on capital adequacy ratio. Finally, Williams (2011) examines the impact of the macro-economic variables on capital base commercial banks and

discovers that macro-economic variables such as inflation, real exchange rate, return on investment, money supply, and political stability are the robust predictors of capital adequacy. He concludes that Inflation has a negative relationship with bank capital base and political instability also impedes financial health and stability of the banking sector as of today.

2.5.1 Arguments for Capital Adequacy Regulation

There have been various arguments in support of capital adequacy. The first argument shows that capital adequacy regulation encourages prudential compliances but the argument did not go further to explain the reasons why there is the need for prudential capital adequacy regulation and its compliance. This brought about the second argument that capital adequacy regulation is a measure to counter moral hazard problems by the regulators (Bentson & Keufman, 1999). The third and final argument is that capital adequacy regulation protects the small depositors in the banks as they form the larger proportion of banks' customers. According to Kishore (2005), Capital adequacy is a minimum fund a financial institution should have in order to run its business in a more economical and prudent manner so as to be able to meet depositors' demands for their money. With capital adequacy, banks will be able to meet their demands and at the same time, have enough liquid to maintain their asset base.

Pandey (2005), according to his argument, makes it clear that adequate capital is a regulated amount of capital based used by banking industries to effectively perform its primary function, preventing failure to absorb losses. It was seen as the ultimate protection against insolvency culminating from the unavoidable market risk in the banking sector. It is the minimum amount required by banks: to inspire and sustain the bank's confidence, to ensure that time and earning will be able to absorb losses without

being involved in an avoidable liquidation and also to enable the banking industry to maximize the full advantage of its profitable growth opportunities.

2.5.2 Capital Adequacy and Performance of Banks, a Global Perspective

Capital adequacy has been a focus of many studies and regulators as it is considered to be one of the main drivers of any financial institution's profitability (Demirguc-Kunt et al., 2013). There is a view that profitable banks are more stable and are in a better position to withstand market shocks than banks with low profitability (CBK, 2014). According to Mathuva (2009), one of the factors that can contribute to the profitability of a bank is its level of core capital because it is this capital that enables the bank to collect more deposits and lend more to the public and thus be in a position to earn higher revenues and thus make higher profits.

On financial stability, emerging evidence reveals that regulatory policy that restricts entry and banks' activities is negatively associated with bank stability (Schuermann, 2014). Beck et al. (2006) argue that banking systems with more restrictions on banks' activities and barriers to bank entry are more likely to suffer systemic banking distress, while capital regulations are not significantly associated with the likelihood of suffering a crisis. Moreover, in highly concentrated markets, financial institutions may believe they are "too-big-to-fail" and this may lead to riskier investments. Empirically, there are several recent studies that have supported this hypothesis. Laeven and Levine (2009) and Berger et al. (2009) both found an inverse relationship between higher market concentration and financial stability suggesting that the risk of bank failures increases in more concentrated markets.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter addresses the methodology for the research. It examines the criteria for determining the appropriate methodology for the study. It discusses the description of the research design, target population, sample design, data collection methods, and data analysis and reporting.

3.2 Research Design

Research design, according to Welman et al. (2009), is best described as the overall plan, according to which the respondents of a proposed study are selected, as well as the means of data collection or generation. Burns and Grove (2003) define a research design as “a blueprint for conducting a study with maximum control over factors that may interfere with the validity of the findings”. The design that was used for this study is the descriptive method. Descriptive research is a collection and interpretation of data (Ghosh, 1992). Information was collected by asking a greater number of people from the sample chosen with known backgrounds some questions. This enabled the researcher to get a possibly broad and accurate view of responses to certain issues and then test theories on social relationships as in (Peil, 1995; Babbie, 2001; and Gill & Johnson, 2002).

3.3 Population and Sample

Kumar (2000) refers to the population as the set of all objects that possess some common set of characteristics with respect to some marketing research problem. Each individual member is referred to as a population element (Zikmund & Babin, 2010). Churchill et al., (2010) define the target population as that part of the total population (universe) to which the study is directed. This is the group from which the sample will be drawn. The population was the 35 commercial banks only 9 are listed on the Ghana Stock Exchange (GSE) hence census survey was undertaken (GSE 2018).

In this study nine (9) banks selected from the period of 2013 to 2017 that is, 5 years and this involved 45 observations to find out the results. The financial year to the companies was the 31st of December each year and all the companies were selected on the availability of data in the captured data range from 2013 to 2017.

3.4 Data Collection

The study used secondary data collected from the financial statements of the target population. The data was obtained from websites of quoted banks under study (audited annual reports), Banking Sector Reports published by the Bank of Ghana (BoG) and Ghana Association of Bankers (GAB) as they were the best source since they had all the financial information for all the banks under review. The data covered a five -year period from 2013 to 2017.

3.5 Data Analysis and Model Specification

The data collected were analyzed using both descriptive and inferential statistics. The researchers used descriptive statistical tools such as means and standard deviations. The

study used Stata 14 Statistical Package. In addition, panel regression were adopted to examines the relationship between dependent and independent variables.

Panel data involves a cluster of time series and cross sectional observations. The study made use of fixed effects model. A correctly specified model has explanatory variables that can explain much of what differentiates each observation in a dataset. However, even if the model is correctly specified, there is some unobserved heterogeneity, which remains largely unmodeled and is often part of the error term (e_{lit}). These problems arise with banks sharing unmodelled heterogeneity across different time periods. Typically, we would like to establish a model so as to explain everything that makes each bank unique or different, but in most cases this becomes difficult, so that certain econometric techniques must be applied to reduce or eliminate the shared systematic statistic heterogeneity of the error term. Since this study uses panel data to solve the potential problem of heterogeneity, a fixed-effect or random-effect regression model must be adopted.

A fixed effect model is a model that has its model parameters non-random quantities. Random effects model on the other hand is attributed to a model that has all or some of its model parameters random (Diggle et al., 2002). In making a choice between fixed or random effects, a Hausman test is used. In the Hausman test, the null hypothesis is that "the preferred model is the random effects", while the corresponding hypothesis is that the preferred model is the fixed effects (Greene, 2008). The Hausman test identifies whether the unique errors are correlated with the regressors, thus, the null hypothesis is that they are not correlated. If the probability of chi-square in the Hausman test output is less than 0.05, fixed effects are preferred; otherwise, the random effect is preferable. The fixed effect was adopted since results were consistent with its adoption.

The general model specification is:

$$Y_{it} = \alpha + \beta X_{1it} + e_{it}$$

Where Y is the dependent variable

α is the constant

β represents the coefficients

E represents the error term

t represents the time dimensions of variables

3.5.1 Definition of variables

1. Return on Assets (ROA) is one of the financial performance indicators that shows how well a firm is managed to generate profitable returns from its total assets. It can be arrived by comparing the net income of a firm to its total assets.

$$\text{ROA} = \text{Net Income} / \text{Total Assets}$$

2. Return on Equity is another primary indicator of performance of a firm and it reflects how well management is able to invest efficiency shareholders' funds to generate profit.

$$\text{It is calculated as: Net income} / \text{Total assets}$$

3. Total Deposits is the total amount of depositors' fund that is lodged with a bank. It can be seen as the liquid assets to total deposits.
4. Capital Adequacy Ratio: is where adjusted capital is adequate to absorb all losses. Is a ratio that reflects the bank ability to withstand unanticipated losses. It is calculated as: Total capital/Total assets
5. Asset Quality: reflects how much fixed assets are held by a company in compared to its total assets. It is calculated as Fixed assets/Total assets.

It can also be seen as the total of non-performing loans to gross loans and advances.

6. Bank size indicated the natural log of the total assets held by a firm.
7. Net Interest Income reflects the cost to income ratio.

3.6 Model Specification

Model 1: Impact of Capital Adequacy Ratio on Return on Assets

$$ROA_{it} = \beta_0 + \beta_1 CAR_{1it} + \beta_2 AQ_{2it} + \beta_3 SIZE_{3it} + \beta_4 NIITA_{4it} + e$$

Where ROA = Return on Asset (Net income to total assets) for bank i in time t

CAR = Capital Adequacy Ratio (total capital to risk weighted assets) for bank i in time t

AQ = Asset Quality (total non-performing loans to gross loans and advances) for bank i in time t

Size = the size of the firm (natural log of total assets) for bank i in time t

NIITA = Net interest income to total asset (cost to income ratio) for bank i in time t

e = error term

Model 2: Impact of Capital Adequacy Ratio on Return on Equity

$$ROE_{it} = \beta_0 + \beta_1 CAR_{1it} + \beta_2 AQ_{2it} + \beta_3 SIZE_{3it} + \beta_4 NIITA_{4it} + e$$

Where ROE = Return on Equity (Net income to total capital) for bank i in time t

Model 3: Impact of Capital Adequacy Ratio on Total Deposits

$$TD_{it} = \beta_0 + \beta_1 CAR_{1it} + \beta_2 AQ_{2it} + \beta_3 SIZE_{3it} + \beta_4 NIITA_{4it} + e$$

Where TD = Total Deposits (Liquid assets to total deposits) for bank i in time t



CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1 Introduction

The objective of the study was to examine the impact of capital adequacy on the financial performance of commercial banks in Ghana. This chapter presented the analysis and findings of the target population of the nine (9) selected commercial banks in Ghana. The target population had consistently traded from 2013 to 2017. The data was obtained from the websites of quoted banks, Bank of Ghana Reports (Banking Sector Reports) and Ghana Association of Bankers (GAB). Also, some of the data was also obtained from the Ghana Stock exchange. The data obtained included return on asset, capital adequacy, asset quality, liquidity, management quality and bank size.

Moreover, the investigation on the impact of capital adequacy adopted the use of the panel regression model to examine the relationship between capital adequacy and financial performance (Return on Asset and Return on Equity) and the relationship between capital adequacy and total deposits of the listed commercial banks. The dependent variables were identified as return on asset, return on equity and total deposits. The independent variables were the total capital to risk weighted assets, assets quality, liquidity, and bank size. The study used both descriptive and inferential statistics to analyse the data found.

4.2 Descriptive Analysis

The descriptive analysis of the study demonstrates the mean and the standard deviation of the various variables that were computed from the financial statement of the commercial banks considered in the study. The data also presented the minimum and

maximum values of the variables. The table below shows the descriptive statistic which is the dependent variable ROA, ROE and the control variables; capital adequacy, asset quality, liquidity, and bank size.

Table 4.1 Descriptive statistics

Variable	Observation	Minimum	Maximum	Mean	SD
Return on Assets	45	0.01	0.2000	0.0424	0.0317
Return on Equity	45	0.068	1.3270	0.2829	0.2099
Total Deposits	45	0.3390	1.7450	0.7656	0.3113
Capital Adequacy	45	0.027	0.2010	0.1184	0.0394
Asset Quality	45	0.0010	0.1220	0.0356	0.0323
Bank Size	45	11.6210	13.076	12.4064	0.3547
Net Interest Income	45	0.011	0.0790	0.0448	0.0158

Source: Researchers' computation using STATA 14, 2018

Table 4.1 gives a summary of the descriptive statistics of the dependent and explanatory variables. It also depicts the variables computed from the financial statements of the nine (9) selected banks considered for the study. From the table, return on assets had a mean score of .0424 and a standard deviation of 0.0317 with a minimum value of .01 and a maximum value of 0.20. The standard deviation is small indicating

that there is a small difference between the banks in terms of return on assets. Return on equity also recorded an average of 0.2829 indicating that on average net income on total equity was 28.29% among the banks. The maximum level of return on equity reported was 1.3270 and a minimum of 0.068 reflecting a high standard deviation of 0.2099 indicating a significant difference among banks in terms of return on equity. Again, the average of total deposits was recorded as 0.7656. The maximum and minimum requirements were recorded as 1.745 and 0.3390 respectively. The standard deviation for the total deposits was 0.3113 indicating an immense difference among the banks.

Capital adequacy had an average score of 0.1184 and a standard deviation of 0.0394. It recorded a minimum value of 0.027 and a maximum value of 0.201. The mean score for asset quality was 0.0356 and a standard deviation of 0.0323 with a minimum value of 0.001 and a maximum value of 0.1220.

Likewise, bank size had a mean score of 12.4064 and standard deviation of 0.3547 with a minimum value of 11.621 and a maximum value of 13.076. With the net interest income, the minimum value reported 0.011 and maximum value of 0.079. The average score further recorded a value of 0.0448 and a standard deviation of 0.0158.

4.3 Correlation Analysis

The correlation analysis, of the study sought to established whether there was linearity between independent and dependent variables. According to Radhe & Kumar (2012), a correlation matrix shows the correlation relationship between the dependent variables and the independent variables. A correlation of -1 represents a perfect negative correlation in which variables move in exactly the opposite direction. Consequently,

variables move in the same direction when a correlation of 1 is found. Correlations indicate the relationship between the variables but they do not imply causation. The table presented the Pearson correlation coefficient which were based on the data from the 9 commercial banks with 45 observations from the period of 2013-2017. The results are presented in table 4.2 below.

Table 4:2 Correlation between the variables in the Banking Industry

Variables	ROA	ROE	TD	CAR	AQ	NIITA	SIZE
Return on Assets	1.0000						
Return on Equity	0.9298	1.0000					
Total Deposits	-0.2122	-0.1243	1.0000				
Capital Adequacy	0.0389	-0.2230	-0.1950	1.0000			
Asset Quality	-0.2434	-0.3215	-0.1129	0.1405	1.0000		
Net Interest Income	0.3636	0.2663	-0.3803	0.3259	0.3649	1.0000	
Bank Size	0.2529	0.2447	-0.1753	-0.0599	-0.3314	0.0899	1

Source: Researchers' computation using STATA 14, 2018

Table 4.2, depicted the correlation between the selected commercial banks indicators to that of the financial performance from 45 observations. The results show a moderate positive relationship exist between Return on Asset and the independent variables (Capital Adequacy, Net Interest Income and the Bank Size) because the highest degree of relationship between the variables is around 36%. However, a negative relationship was established between Return on Assets and Asset Quality of 20%.

Also, Return on Equity had a negative moderate correlation with two independent variables (Capital Adequacy; 22% and Asset Quality; 32%) but a moderate positive

relationship with the Size of the Bank and Net Interest Income of 26.6% and 24.4% respectively.

The Total deposits also recorded a weak negative correlation between all the independent variable falling the range of 11% to a negative moderate relationship of 38%. The explanatory variables includes Capital Adequacy Ratio, Asset Quality, Size and Net Interest Income.

4.4 Regression Result

The main objective of the study was to examine the impact of capital adequacy on the financial performance on commercial bank. The dependent variables are return on asset (ROA), return on equity (ROE) and total deposits (TD) and the independent variables are total capital to risk weighted assets (CAR), assets quality, net interest income (NIITA), and bank size. The regression analysis was performed to examine the influence of the independent variables on the dependent variable.

4.4.1 Impact of Capital Adequacy on Performance – Return on Assets (Objective 1)

The regression analysis was performed with the dependent variable as Return on Assets (ROA) and the explanatory variable as capital adequacy ratio (CAR). The results are displayed in table

Table 4.3 Fixed Effect model of the impact of capital adequacy on performance.

Dependent variable: Return on Assets

Variables	Coefficient	Std Err	t	P ≥ t
Capital Adequacy Ratio (CAR)	-0.3849*	0.2082	-1.85	0.074
Asset Quality (AQ)	-0.3719*	0.1954	-1.90	0.066
Net Interest Income (NIITA)	0.4612	0.1412	1.12	0.272
Bank Size (SIZE)	-0.0548**	0.0258	-2.12	0.042
Constant	0.7611**	0.3455	2.20	0.035

Source: Researchers' computation using STATA 14, 2018

* Statistically Significant at 10 percent

** Statistically Significant at 5 percent

The results show that the coefficient of capital adequacy ratio on return on assets is -0.3849. This means that when capital adequacy ratio increases, return on assets fall. This contrast with the findings of Shabani et al. (2018) and Owusu (2014) which reported that an increase in the capital adequacy requirement have a positive effect on the return of assets and thereby financial performance. However, this result is consistent with the findings of Barnor & Odonkor (2012) which revealed that, an increase in capital adequacy had a negative and insignificant impact on Return on Assets (ROA).

Capital adequacy is the minimum required capital a bank is expected to have with the central bank of Ghana. It serves as a measure of exposure to risks banks face (Al-Sabbagh, 2004). However, the banks have been struggling to meet up the new minimum capital directive been set by the Bank of Ghana which affects the performance of these banks in terms of management's ability to generate profitable returns on the bank's assets.

The result also shows that the coefficient of the size of bank is -0.0548. This means that when size increases, return on assets will fall. This is in contrast to theory because the banks in Ghana are not able to meet up with the minimum requirement and are therefore forced to rely on proceeds from their asset base to enable them meet up with the regulation. The banks are not able to expand their assets and therefore their size becomes relatively smaller. This result is in contrast to the findings of observed by Gatete (2015) and Ghosh et al. (2003) which revealed that the bank size is moderately positively correlated to profitability of commercial banks in Kenya. However, other factors like efficiency of the bank, credit policies, management and investments decisions were keen to obtaining profitability.

4.4.2 Impact of Capital Adequacy on Performance – Return on Equity (Objective 2)

The regression analysis was performed to determine the impact of capital adequacy ratio on Return on Equity (ROE). The results are displayed in table

Table 4.4 Fixed Effect model of the impact of capital adequacy on performance.

Dependent variable: Return on Equity

Variables	Coefficient	Std Err	t	$P \geq t $
Capital Adequacy Ratio (CAR)	-4.2191**	1.4521	2.91	0.007
Asset Quality (AQ)	-3.0798	1.3628	1.11	0.275
Net Interest Income (NIITA)	3.1909**	2.8761	2.26	0.031
Bank Size (SIZE)	-0.2886	0.1805	1.60	0.120
Constant	4.3311*	2.4097	1.80	0.082

Source: Researchers' computation using STATA 14, 2018

* Statistically Significant at 10 percent

** Statistically Significant at 5 percent

According to the results, the coefficient for capital adequacy ratio is -4.2191. This means that, an increase in capital adequacy ratio will cause a fall in the return on equity. Return on equity measures the profit generated by management on shareholders' funds invested. The banks are deviating from the core interest of shareholders which is maximization of their wealth by concentrating on how to meet up with the minimum capital direction and stay in operation. This result is in contrast to findings observed by Almazari & Alamri (2017), Branor & Odonkor (2012) and Okelo (2015) indicating that, capital adequacy had a significant positive impact on the return on equity (ROE) as banks that had met the requirement were solvent and hence are able to mobilize huge shareholders' funds for profitable investments and earnings.

The results further show that the coefficient of size is -0.2886. This means that as size increase, return on equity will fall. Management in their bid to stay in operations concentrate largely on meeting up with the capital adequacy requirement and thereby direct all their efforts and resource to operations that will yield high returns to enable them fulfill the requirement. This results in the bank's inability to expand their size since all earnings are directed to meeting up the requirement. This result is in line with the findings of Kagecha, 2014; Dery et al., 2017 and Aruwa & Naburgi, 2011 which observed that an increase in the size of the bank had a positive coefficient but statistically insignificant on the Return on Equity. This was as a result of firms increasing their size through high debt equity which results in high cost of capital.

4.4.3 Impact of Capital Adequacy on Total Deposits (Objective 3)

The regression analysis was performed to determine the impact of capital adequacy ratio on Total Deposits. That is if there is an increase in the minimum capital requirement, what would be the effect on deposits. The results are displayed in table 4.5.

Table 4.5 Fixed Effect model of impact of capital adequacy on total deposits.

Dependent variable: Total Deposits

Variables	Coefficient	Std Err	t	$P \geq t $
Capital Adequacy Ratio (CAR)	-2.4792*	1.3175	-1.88	0.060
Asset Quality (AQ)	-2.1425	1.3992	-1.53	0.126
Net Interest Income (NIITA)	3.1504	3.2698	0.96	0.335
Bank Size (SIZE)	0.0011	0.1662	0.01	0.995
Constant	0.9808	2.1853	0.45	0.654

Source: Researchers' computation using STATA 14, 2018

* Statistically Significant at 10 percent

The coefficient of capital adequacy ratio is -2.4792. This means that when capital adequacy ratio increases total depositors fund will fall. This is in contrast to theory because the expectation is that total depositors' funds increases. However, in the current study, this result is not out of place. This is because, anytime the central body institute a new capital adequacy ratio, it sends a wrong signal to users of banking services that the banks are not solvent enough. These individuals who do not have enough knowledge of the banking system rather decide to withdraw their funds from these banks and others find substitute for keeping their money safe. This cause average deposit to fall. A typical example was Group Ndoum Bank, which suffered panic withdrawal when the central body announced the new minimum capital requirement.

The coefficient of size is 0.0011. This means that when size increases, total depositors funds also increase. This is true because banks with large size turns to attract more and/or new deposits because of customers confidence in these banks. This however is

not statistically significant. The study is in line with findings of Bourke (1989), Fama & French (2012), Frederic (2014) and Mosyoka (2017).



CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

5.1. Introduction

This chapter dealt with the summary of the entire findings of the study, the conclusion drawn from the findings and the recommended measures stipulated by the findings of the study.

5.2 Summary of Findings

Based on the findings of the descriptive statistics analysis, it was observed that, the return on assets had a mean score of .0424 and a standard deviation of 0.0317 with a minimum value of .01 and a maximum value of 0.20. This showed that there was a small difference among the banks under study in relation to return of assets. Return on equity also recorded an average of 0.2829 indicating that on average net income on total equity was 28.29% among the banks. The maximum level of return on equity reported was 1.3270 and a minimum of 0.068 reflecting a high standard deviation of 0.2099 indicating a significant difference among banks in terms of return on equity. Total deposits had a score of 0.7656. The maximum and minimum requirements were recorded as 1.745 and 0.3390 respectively. The standard deviation for the total deposits was 0.3113 indicating an immense difference among the banks. Capital adequacy was also seen to be averagely distributed with a mean score of 0.1184 and a maximum value of 0.201. This meant that, most of the banks under study were doing their best to meet the minimum capital requirement directive. The size of the bank also was also seen to be competitively close and this was evidenced by a mean score of 12.0406. The maximum and minimum scores are 13.076 and 11.621 respectively.

The study further analysed the variables under study to establish the relationship that exists between them through a Pearson correlation coefficient. The analysis was performed to analyze the relationship between return on asset, return on equity, total deposits and capital adequacy, asset quality, net income interest and the bank size. The study observed a moderate positive relationship between return on assets and the independent variables, that is, capital adequacy, net interest income and bank size. However, an adverse relationship was observed for asset quality and return on asset of 20%.

Again, return on equity also reflected a negative relationship between capital adequacy and asset quality with 22% and 32% respectively. However, we saw a positive relation between the bank size and net interest income of 27% and 24% respectively. On total deposits, a weak negative correlation was recorded between total deposits and all the explanatory variables.

The study employed panel regression to examine the relationship between the variables in the study. The regression analysis examined the impact of capital adequacy on financial performance (ROA and ROE) and the impact of capital adequacy on total deposits of commercial banks.

Findings of the study showed that capital adequacy had a negative implication on return on assets (ROA). This means that a percentage increase in capital adequacy ratio will result in a fall in the return on assets. The coefficient of capital adequacy on return on assets as per results was -0.3849. This implied that capital adequacy influences financial performance negatively. This result is consistent with the findings of Barnor & Odonkor (2012) which revealed that, an increase in capital adequacy had a negative and insignificant impact on Return on Assets (ROA). Again, the impact of bank size on

return on asset (ROA) was ran and it was observed that return on assets fall as the size of the bank increases. This is evidenced by the coefficient of the bank size as -0.0548. This result is in contrast to the findings of observed by Gatete (2015) and Ghosh et al. (2003) which revealed that the bank size is moderately positively correlated to profitability (performance).

The second objective of the study was to establish the impact of capital adequacy on return on equity (ROE). The result of the regression study showed that capital adequacy adversely impact return on equity. The regression study had a coefficient of -4.2191 which means that, as capital adequacy increases, the return on equity falls. One of the attributing factors of this phenomenon is that, most banks are not well solvent and the introduction of the new minimum capital requirement has made these firms channelled all earnings and profitability returns towards meeting the requirement, hence shareholders wealth is not been maximized.

Finally, the third objective was to examine the impact of capital adequacy on total deposits. The objective was to ascertain that, if there is an increase in the capital adequacy ratio which serves as a buffer in case of insolvency, what will be depositors' response. The results revealed a coefficient of -2.4792 which means there exist a negative relationship between capital adequacy and total deposits. In theory, depositors are to respond positively to an increase in capital adequacy requirement but due to insufficient education on these banking reforms in Ghana, depositors take such directives as a call to relocate their funds from banks to where they feel it will be safe.

5.3 Conclusion

Capital adequacy is the amount of capital a bank or other financial institution hold as required by its financial regulator. Also, the main objective of this study was to examine

the impact of capital adequacy on the financial performance of commercial bank. The study concluded that capital adequacy had a negative and significant relationship on the financial performance of the selected banks. Likewise, bank's size also had an adverse influence on the financial performance of the selected commercial banks. In addition, the regression between total deposits and capital adequacy had a negative influence. The empirical study showed as more capital is kept as a buffer for the safety of bank depositors and stakeholders, it affects the performance of Ghanaian banks. The main aim of regulators in the country is not to promote performance, but set the minimum capital requirement as a means to maintain a stable environment for operations while safeguarding depositors' interest.

5.4 Recommendation

The study therefore had the following suggestions in lieu to the objectives of the study.

A policy on efficient management should be put in place for the banks to aid them in the determination of equity capital and the amount of loans that will enable them to obtain optimal utilization of resources. This will help the banks and other financial institution increases their return on asset and their liquidity. It also recommended that policy makers and other government bodies should carefully examine the financial statement of various banks. Normally published financial statements do not give complete picture of the activities of commercial banks performance. It would be better if the banks operate with market data in order to have a better picture of the situation.

Based on the study, it can be seen that management of commercial banks should take measure to enhance and also retained their earning. Banks capitalization should be encouraged so that bank performance can be enhanced. Banks should endeavour to

retain earnings to boost up capital rather than paying exorbitant bonuses. A well-capitalized banking system will ensure financial stability and make the industry more resilient against external shocks and risk.

It is also recommended that, further study should be conducted to determine other factors that impacts on financial performance such as risks and other macro-economic variables.



REFERENCES

- Addae, A. A., Nyarko-Baasi, M., & Hughes, D. (2013). The effects of capital structure on profitability of listed firms in Ghana. *European Journal of Business and Management*, 5(31), 2015-229.
- Adeolu, M. (2014). Asset quality and bank performance: A study of commercial banks in Nigeria: A linear approach. *Internal Journal of Novel Research in Marketing and Economics*, 5(18), 40-43.
- Agha, H. (2014). Impact of Working Capital Management on Profitability. *European Scientific Journal*, 10(1) 374-381.
- Amponsah, S. (2013) Impact of operational capital management on performance. *Journal of Economics and Finance*, 20(1), 451-472.
- Akintoye, I. R. (2008). Corporate governance and merger activity in Nigerian banking industry. *International Research Journal of Finance and Economics*, 19, 136.
- Akoto, R. K.-V. (2013). Working capital management and profitability: Evidence from Ghanaian listed manufacturing firms. *Journal of Economics and International Finance*, 5(9), 373.
- Almazari, A. A., & Alamri, M. A. (2017). The effect of capital adequacy on profitability: a comparative study between Samba and Saab Banks of Saudi Arabia. *International Journal of Economics, Commerce and Management*, 5(11), 86-102.
- Al-Sabbagh, K. (2004). Determinants of capital adequacy ratio in banking sector. An empirical analysis from Pakistan. *Academy of Contemporary Research Journal*, 25(3) 18-26.

- Aruwa, S. A., & Naburigi, M. M. (2011). Impact of capital adequacy on the financial performance of quoted deposit money banks in Nigeria. *4th International Conference of Faculty of Administration*. Nasarawa State: Nasarawa State University.
- Athanasoglou, S. B. (2013). A comparison of financial performance in the banking sector: Some evidence from Omani Commercial Banks. *International Research Journal of finance and Economics*, 103-112.
- Babalola, Y. A. (2013). The effect of firm size on firms profitability in Nigeria. *Journal of Economics and Sustainable Development*, 4(5), 28-50.
- Babbie, E. &. (2001). *Qualitative data analysis: The practice of social research*. South Africa: PennVile Press.
- Barnor, C., & Odonkor, T. (2012). Capital adequacy and the performance of Ghana Banks. *Journal of Business Research*, 6(2) 23-34.
- Basel Committe on Banking Supervision. (1988). *International convergence of capital measurement and capital standards*. Basel: Bank for International Settlements.
- Bentson, G. &. (1999). Is the banking ang payment systems fragile? *Journal of Financial Services Research*, 209-215.
- Berk, J. D. (2012). *Fundamentals of corporate finance*. Washington: Pearson.
- Bhandarkar, P. L. (2003). *Methodology & technique of social research*. Mumbai: Himalaya Publishing House.
- Booth, L. A. (2001). Capital structure in deelopng countries. *Journal of Finance*, 56, 88-135.

- Bourke, P. (1989). Concentration and other determinants of banks profitability in Europe, North America and Australia. *Journal of Banking and Finance*, 13(1) 70-75.
- Bradley, M. J. (1984). On the existence of an optimum capital structure: Theory and evidence. *Journal of Finance*, Vol. 39, 857-870.
- Burns, N. &. (2004). *The practice of nursing research*. Philadelphia: W.B. Saunders Company.
- Carl, D. M. (2010). *Marketing research* (5th ed.). New York: Wiley.
- Copeland, T. E. (1988). *Financial Theory and corporate policy*. Boston: Addison-Wesley.
- Crosse, H. &. (1980). *Management policies for commercial banks*. Boston: Bankers Publishing Company.
- Crowther, D. (2004). *Agency theory: A cause of failure in corporate*. London: Metropolitan University, Department of Accounting, Banking and Financial Systems.
- Dery, N. J., Kannyiri, B. T., & Mbawuni, J. (2017). Determinants of capital structure of listed firms in Ghana: Empirical evidence using a Dynamic System Gmm. *Journal of Accounting and Management*, 7(2), 159-173.
- Diamond, D. &. (2001). Liquidity risk, liquidity creation, and financial fragility: A theory of banking . *Journal of Political Economy*, 109(2), 288-309.
- Diamond, P. (2000). Bank performance in transition economies. *Working Paper*, 505.

- Diggle, P. J., Heagerty, P., Liang, K.-Y., & Zeger, S. L. (2002). *Analysis of longitudinal data* (2nd ed.). Oxford: Oxford University Press.
- Dogan, M. (2013). Does firm size affect profitability? Evidence from Turkey. *Research Journal of Finance and Accounting*, 4(4), 55-58.
- Ebhodaghe, G. A. (2003). The causes of bank failures and persistent distress in the banking industry. . *NDIC Quarterly*, 13(4), 21-40.
- Ezra, S. (1963). *Theory of financial management*. New York: Columbia University Printing Press.
- Farma, E. F. (2012). Size, value and momentum of international stock returns. *Journal of Economics*, 105(3), 457-472.
- Fraenkel, J. R. (2000). *How to design and evaluate research in business*. New York: McGraw-Hill.
- Frederic, N. (2014). Factors affecting performance of commercial banks in Uganda: A case for domestic commercial banks. *25th International Business Research Conference, South Africa*, 1-19.
- Gatete, A. (2015). The effect of bank size on profitability of commercial banks in Kenya. *The Review of Economics and Statistics*, 54(1), 25-37.
- Gaud, P. J. (2005). The capital structure of Swiss companies: An empirical analysis using dynamic panel data. *European Financial Management*, 11, 1, 49-70.
- Ghosh, K. D. (1992). Optimum capital structure redefined. *Financial Review*, Vol. 27, 3.

- Ghosh, S. N. (2003). Capital requirements and bank behavior: An empirical analysis of Indian public banks. *Journal of International Developments*, 15, 154-156.
- Gill, J. &. (2002). *Research methods for managers* (3rd ed.). London: Sage publishing.
- Gjergji, A. (2006). *Does Albania have a developed financial market? Non banking sector, not functioning pillar of the system*. Italy: Interdisciplinary Master on East European Studies & Research (MIREES) University of Bologna & Instituto per l'Europa Centro Orientale, Bologna/Italy, January 2006.
- Greene, W. H. (2008). *Econometric Analysis* (6th ed.). Upper Saddle River: Prentice Hall.
- Gremi, E. (2013). Internal factors affecting Albania banking profitability. *Academic journal of interdisciplinary Studies*, 2(9) 19-25.
- Greuing, H. V. (2003). *Analyzing banking risk: A framework for assessing corporate governance and risk management*. Geneva: World Bank Publications.
- Halling, M. &. (2006). *Bank failure prediction: A two-step survival time approach*. Vienna: Austrian National Bank.
- Harria, M. &. (1991). The theory of capital structure. *Journal of Finance*, 46, 297-355.
- Hazel, J. J. (1994). Prospect Theory in the Commercial Banking Industry. *Journal of Financial and Strategic decision*, 7, 73-89.
- Hillier, D. P. (2011). The impact of country-level corporate governance on research and development. *Journal of International Business Studies*, 42, 76-98.
- Holmstrom, B. &. (2000). Liquidity and risk management. *Journal of Money, Credit and Banking*, 32(3), 300-310.

- Hovakimian, A. O. (2001). The debt-equity choice. *Journal of Financial and Quantitative Analysis*, 36, 1-24.
- Jensen, M. C. (1976). Theory of the firm: Managerial behavior, agency cost and ownership structure. *Journal of Financial Economics*, 3(4), 305-360.
- Kagecha, P. K. (2014). Bank performance: Does the bank size matter? *International Journal of Economics and Finance*, 3(1), 305-317.
- Kigen, W. K. (2014). *The effect of firm size on probability of insurance companies in Kenya*. Nairobi: University of Nairobi.
- Kim, E. (1978). A mean-variance theory of capital structure and corporate debt capacity. *The Journal of Finance*, 33(1) 45-63.
- Kraus, A., & Litzenberger, R. (1973). A state-preference model of optimum financial leverage. *Journal of Finance*, 3(6) 46-59.
- Leland, E., & Pyle, D. (1977). Information asymmetries, financial structure and financial intermediation. *Journal of Finance*, 32(2) 371-375.
- Liargovas, P., & Skandalis, K. (2010). Factors affecting firm's performance: the case of Greece. . *Global Business and Management Research*, 2(2) 188-195.
- Lopez-Garcia, J., & Sogorb-Mira. (2008). The small business economics. *International Journal of Economics*, 31(2) 117-136.
- Mathuva, D. (2009). Capital adequacy, cost income ratio and the performance of commercial banks: The Kenyan Scenario. *The International Journal of Applied Economics and Finance*, 3(2) 38-45.

- Mayer, R., Davis, J., & Schoorman, F. (1995). An integrative model of organizational trust. *The Academy of Management Review*, 20, 709-734.
- Memba, S. (2011). *The impact of venture finance on performance of small and medium enterprise in Kenya*. Nairobi: Jomo Kenyatta University of Agriculture and Technology.
- Miguel, A., & P, J. (2001). Determinants of capital structure: new evidence from Spanish panel data. *Journal of Corporate Finance*, 7, 79-96.
- Modigliani, F., & Miller, M. (1958). The cost of capital, corporate finance and theory of investment. *American Economic Review*, 48(3), 261-297.
- Morck, R., Shleifer, A., & Vishny, R. (2014). Management ownership and market valuation: An empirical analysis. *Journal of Financial Economics*, (20), 293-315.
- Mostafa, H., & Boregowda, S. (2014). A brief review of capital structure theories. *Research Journal of Recent Sciences*, 35(5), 256-257.
- Mosyoka, B. (2017). *The effect of capital adequacy on the financial performance of commercial banks in Kenya*. Nairobi: University of Nairobi.
- Mugenda, O., & Mugenda, A. (2003). *Research methods: Quantitative and qualitative approaches*. Nairobi: Acts Press.
- Muritala, T. A. (2012). An empirical analysis of capital structure on firm's performance of commercial banks in Nigeria. *Internal Journal of Advances in Management and Economics*, 1: 116-120.

- Mwangi, J. (2016). *Effect of financial structure on financial performance of firms listed at East Africa securities exchange*. Nairobi: Jomo Kenyatta University for Agriculture and Technology.
- Myers, S., & Majluf, N. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, (13), 187-221.
- Neuman, L. W. (2000). Social research methods: Quantitative and qualitative approaches. *Journal of Finance*, 225-241.
- Numusonge, G. (2010). *Business statistics: Concepts and applications*. Beau Bassin: VDM Publishing House Ltd.
- Okelo, C. (2015). *Determinants of financial risk of listed companies on the Nairobi securities exchange in Kenya*. Nairobi: Doctorial Dissertation.
- Olalekan, A., & Adeyinka, S. (2013). Capital adequacy and banks' profitability : An empirical evidence from Nigeria. *American International Journal of Contemporary Research*, 3(10), 87-95.
- Ongore, V., & Kusa, G. (2013). Determinants of financial performance of commercial banks in Kenya. *International Journal of Economics and Financial Issues*, 3(1), 237-252.
- Owusu, M. (2014). Determinants of performance of commercial banks in Ghana. *Journal of Finance*, 15-18.
- Pandey, I. M. (2005). *The financial management* (9th ed.). India: Vikas Irish Publication.

- Peil, M. (1995). *Social science research methods handbook for Africa*. Nairobi: Educational Publishers.
- Pervan, M., & Pelivan, I. (2015). *Profit persistence and determination of banks profitability in Croatia*. Istrazivanja: Econs. Res. - Ekon.
- Ross, S., Westerfield, R., & Jaffe, J. (1999). *Corporate Finance* (5th ed.). New York: Irwin/McGraw-Hill.
- Scott, J. H. (1976). A theory of optimal capital structure. *The Bell Journal of Economics*, 7(1), 33-54.
- Shabani, H., Morina, F., & Misiri, V. (2018). The effect of capital adequacy on return of assets of commercial banks in Kosovo. *European Journal of Sustainable Development*, 8(2) 201-208.
- Singh, D. (2010). *Bank specific and macroeconomic determinants of bank profitability: The Indian evidence*. Mumbai: Paradigm.
- Staurt, H., & Mazero, J. (2008). *Financial performance representations*. Chicago: American Bar Associations.
- Survey, G. B. (2017). *Risk-based minimum regulatory capital regime: what it means for banks in Ghana*. Accra: PricewaterhouseCoopers (Ghana). Accra: pwc.
- Titman, S., & Wessels, R. (1988). The determinants of capital structure. *Journal of Finance*, 43, 1-19.
- Welman, C., Kruger, F., & Mitchell, B. (2009). *Research methodology* (3rd ed.). Cape Town: Oxford Press.

Zikmund, G. W., & A Babin, J. (2010). *Exploring marketing research*. Ohio: South-Western Publishing Company Limited.



APPENDICES

APPENDIX I – FINANCIAL DATA DERIVED FROM THE FINANCIAL STATEMENTS

BANKS	Index	Year	ROA	ROE	CAR	T.D	AQ	NIITA	SIZE
ECOBANK	1	2013	0.045	0.346	0.097	0.659	0.002	0.043	12.825
ECOBANK	1	2014	0.053	0.388	0.099	0.483	0.002	0.041	12.635
ECOBANK	1	2015	0.055	0.432	0.087	0.468	0.014	0.046	12.505
ECOBANK	1	2016	0.053	0.398	0.087	0.46	0.01	0.049	12.367
ECOBANK	1	2017	0.061	0.396	0.09	0.491	0.021	0.059	12.226
GCB	2	2013	0.034	0.151	0.144	0.885	0.011	0.035	13.058
GCB	2	2014	0.05	0.287	0.115	0.574	0.005	0.043	12.89
GCB	2	2015	0.039	0.181	0.12	0.542	0.029	0.041	12.768
GCB	2	2016	0.042	0.284	0.103	0.491	0.047	0.034	12.746
GCB	2	2017	0.042	0.198	0.093	0.551	0.064	0.036	12.705
NIB	3	2013	0.018	0.082	0.169	0.793	0.037	0.049	12.561
NIB	3	2014	0.012	0.113	0.14	0.811	0.008	0.037	12.447
NIB	3	2015	0.039	0.258	0.12	0.719	0.082	0.041	12.279
NIB	3	2016	0.048	0.303	0.115	1.745	0.046	0.056	12.168
NIB	3	2017	0.041	0.25	0.126	1.082	0.089	0.063	12.018
SGSSB	4	2013	0.037	0.198	0.14	0.759	0.026	0.056	12.621
SGSSB	4	2014	0.039	0.173	0.157	0.599	0.026	0.055	12.564
SGSSB	4	2015	0.2	1.327	0.136	0.694	0.007	0.055	12.465
SGSSB	4	2016	0.069	0.288	0.151	0.471	0.03	0.067	12.387
SGSSB	4	2017	0.055	0.269	0.156	0.591	0.075	0.06	12.32
STANBIC	5	2013	0.042	0.563	0.074	0.999	0.002	0.068	12.547

STANBIC	5	2014	0.037	0.32	0.113	0.698	0.009	0.031	12.131
STANBIC	5	2015	0.032	0.239	0.128	0.407	0.067	0.051	11.945
STANBIC	5	2016	0.022	0.159	0.128	0.366	0.065	0.048	11.869
STANBIC	5	2017	0.03	0.102	0.196	0.339	0.029	0.047	11.621
BARCLAYS	6	2013	0.037	0.322	0.079	0.89	0.009	0.026	13.076
BARCLAYS	6	2014	0.07	0.503	0.096	0.741	0.009	0.047	12.815
BARCLAYS	6	2015	0.098	0.622	0.113	0.786	0.001	0.055	12.694
BARCLAYS	6	2016	0.09	0.518	0.107	0.653	0.022	0.055	12.68
BARCLAYS	6	2017	0.087	0.548	0.103	0.575	0.033	0.058	12.578
ADB	7	2013	0.025	0.122	0.201	0.845	0.017	0.062	12.673
ADB	7	2014	0.028	0.155	0.169	0.644	0.053	0.054	12.613
ADB	7	2015	0.024	0.121	0.181	0.696	0.05	0.052	12.536
ADB	7	2016	0.04	0.197	0.181	0.527	0.122	0.079	12.491
ADB	7	2017	0.029	0.17	0.155	0.57	0.11	0.047	12.476
SCB	8	2013	0.021	0.208	0.073	1.661	0.016	0.021	12.576
SCB	8	2014	0.027	0.247	0.081	1.226	0.015	0.017	12.206
SCB	8	2015	0.015	0.113	0.101	1.189	0.01	0.016	12.03
SCB	8	2016	0.011	0.068	0.15	1.062	0.005	0.011	11.848
SCB	8	2017	0.035	0.168	0.163	1.333	0.01	0.012	11.773
ACCESSBANK	9	2013	0.01	0.266	0.027	0.723	0.012	0.018	12.566
ACCESSBANK	9	2014	0.017	0.205	0.059	0.742	0.054	0.034	12.226
ACCESSBANK	9	2015	0.011	0.143	0.059	0.955	0.084	0.036	12.139
ACCESSBANK	9	2016	0.016	0.127	0.081	1.108	0.082	0.039	11.923
ACCESSBANK	9	2017	0.022	0.203	0.068	0.849	0.088	0.066	11.703

Source: Annual reports and Banking Sector Reports (2013 – 2017).