

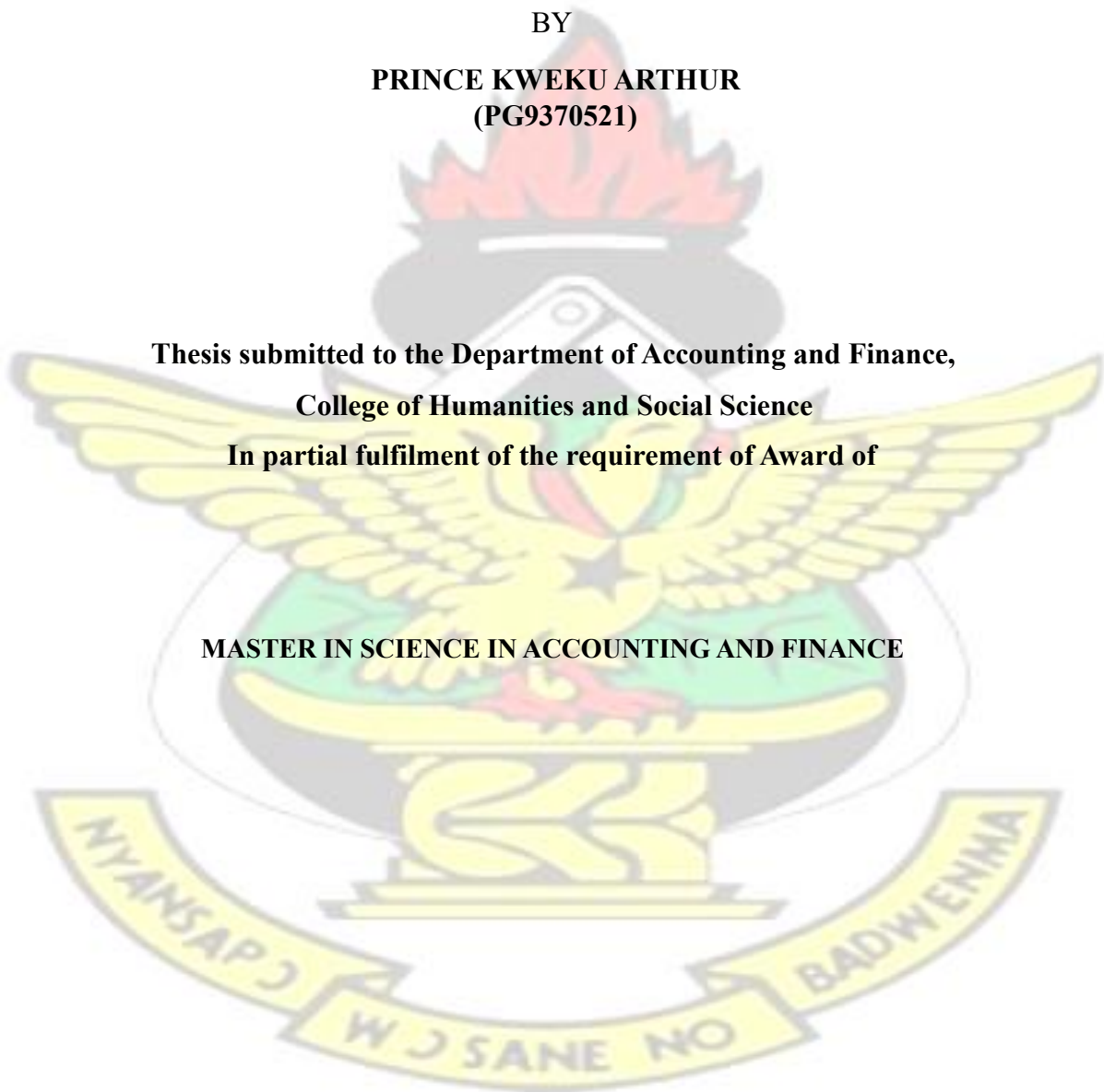
**KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY,
KUMASI**

**TOPIC:
ANALYSIS OF FACTORS AFFECTING PROFITABILITY OF COMMERCIAL
BANKS USING THE CAMEL APPROACH**

**BY
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**Thesis submitted to the Department of Accounting and Finance,
College of Humanities and Social Science
In partial fulfilment of the requirement of Award of**

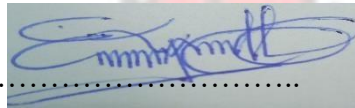
MASTER IN SCIENCE IN ACCOUNTING AND FINANCE



DECLARATION

I hereby declare that this submission is my own work towards Master of Science degree in Accounting and Finance and to the best of my knowledge, it contains no material previously published or written by another person nor material which has been accepted for the award of any other degree of the University, except where due acknowledgment has been made in the thesis.

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ABSTRACT

The purpose of this research was to analyze the variables that determine the profitability of commercial banks in Ghana using the CAMEL methodology, as well as to differentiate the effects of different types of bank ownership. The research used a methodology that was both descriptive and explanatory. The Ghanaian commercial banking industry was selected as the target demographic for this investigation. In this particular research, a method known as purposeful sampling was used to collect data from 9 banks on GSE. The company's website had yearly reports, which allowed for the collection of secondary data. The data came from annual reports that companies had submitted during the given time period (2010-2021). The parameters that were included in the research goals were estimated using a pooled OLS model of estimation in addition to a random effect model of estimation. The empirical data reveal that the CAMEL framework, which takes into consideration all of the following factors: management effectiveness; capital strength; earnings capacity; asset quality; and liquidity, is the one that experts recommend using in order to evaluate the performance of a bank. According to the findings of this study, commercial banks have better liquidity and a stronger position in the CAMEL components than conventional banks that are not listed. This shows that commercial banks are more financially stable than conventional banks. When comparing banks based on the structure of their ownership, private banks beat their public sector counterparts in terms of capitalization, the quality of their assets, the management efficiency of their operations, and profitability. This illustrates that private banks dedicate a bigger amount of their revenue to the research and development of strategies that reduce costs. As a consequence of this, private banks are more robust than their counterparts in the public sector in terms of financial performance metrics such as the quality of their assets, the strength of their capital, the profits potential, and the management effectiveness of their organizations. The findings of the study suggest that, in order for the Ghanaian banking system to remain competitive and more resilient to economic shocks, efficiency goals should be prioritized.

Financial institutions should ensure that their staff has a solid grasp of the fundamentals of CAMEL and the CAMEL rating. In addition, there need to consistently be robust engagement between the regulators of banks and the institutions themselves. If Ghana's commercial banks, in particular, want to see an increase in their profitability, they will need to improve their capacities for credit risk management. This will allow them to avoid the bad performance of assets that are acquired mostly via loans and advances. Ghana commercial banks, in particular, should branch out into non-traditional areas and earn money from varied businesses other than core banking activities if they are to boost profitability and sustain expansion.

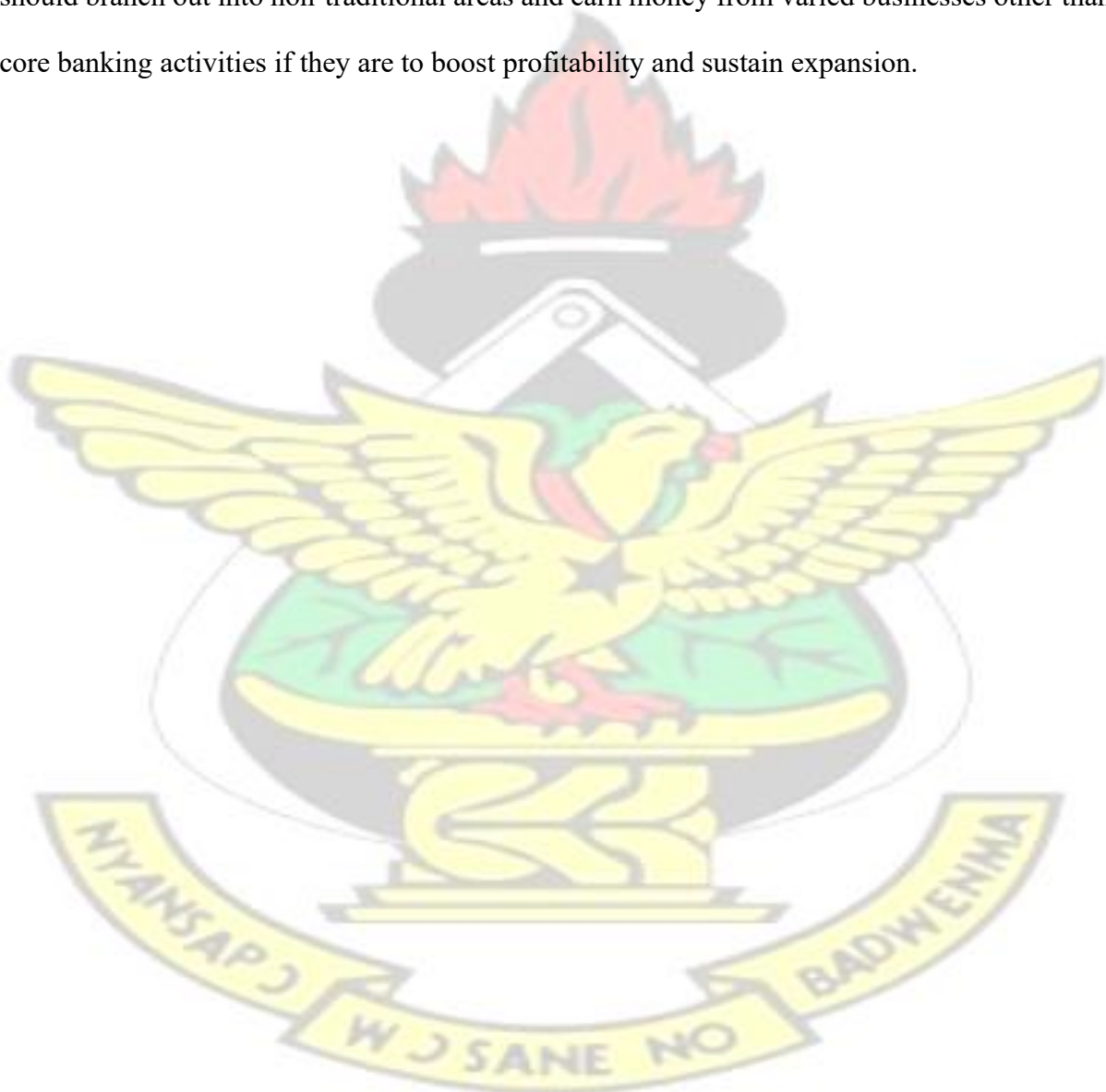


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Finally, I would like to thank God, for letting me through all the difficulties. I have experienced your guidance day by day. You are the one who let me finish my degree. I will keep on trusting you for my future.

KNUST

The logo of Kenya Methodist University (KNUST) is centered in the background. It features a yellow eagle with spread wings perched on a green shield. Above the eagle is a black mortarboard with a red flame. A banner at the bottom of the shield contains the motto 'KISAKA KWA KUTOKA' in Swahili.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

By generating a substantial economic shock on a worldwide scale, the COVID-19 pandemic was the impetus for the world's most severe economic downturn (OECD, 2020). It is projected that the rebound would be uneven across nations, with robust growth in big economies while many emerging economies continue to lag behind. Even though the global economy is on the path to recovery, the rebound is expected to be unequal between countries (World Bank, 2021). It is projected that countries in Sub-Saharan Africa would have had major setbacks in development and rises in per capita income by at least 10 years later as a result of the epidemic. These countries are among those that have been hit the worst by the pandemic (African Development Bank, 2021; World Bank, 2021).

As a consequence of continuous large-scale containment measures being adopted by governments and the uncertainty surrounding the pandemic's length, the economic and financial situations in poor nations continue to deteriorate, which makes recovery more unequal, difficult, and unpredictable (Katusiime, 2021). The health crisis was the cause of a multitude of problems, including, among other things, a deepening of the economic slump, job losses, increased inflationary pressure, rising unemployment rates, and a rise in crime (Iwedi, Kocha and Onaakpono, 2020). According to Alarussi, and Alhaderi (2018), during crisis, businesses focused on maintaining their financial stability by taking drastic action. However, the combination of insufficient knowledge and high stakes almost always backfires, worsening the company's financial position.

In the banking sector, although Fitriyah, et al. (2021) and Basyir, (2021) found a fairly healthy Islamic commercial bank in phase of the covid 19 crises. In contrast commercial banks (CBs) experienced a loss in efficiency during the covid 19 pandemic (Gazi, 2022). According to Amnim, Aipma, and Obiora (2021), the partial and total lockdowns imposed by the government during the COVID-19 Pandemic made it increasingly difficult for businesses to gain access to inputs at the local markets. Additionally, these lockdowns made it difficult for businesses to export and import goods, which had a negative impact on the firm's liquidity and profitability. Other investigations on the influence of covid 19 on the profitability of banking at commercial banks were unable to reach a different conclusion (Aldasoro et al. 2020; Ihsan and Hosen, 2021; Ferdinandus, 2020).

The distribution of a country's available financial resources is greatly influenced by the activities of its commercial banks. Continuously, they transfer money from savers to those who invest. If their revenue is higher than their costs of operation, they will be able to sustain their operations. In other words, for the intermediation function to be sustainable, banks must be profitable (Varaprasad and Rao, 2019). Especially for joint stock commercial banks, profits are

the ultimate aim, making net profit indicators of interest to bank managers and investors (Saeed, Shahid and Tirmizi, 2020). Return on assets (ROA), return on equity (ROE), and net interest rate are all metrics used to evaluate bank profitability (Anggono, 2017; Ongore and Kusa, 2013).

The Return on Assets (ROA) of a bank is calculated by dividing its average pretax profit by its total assets (Anggono, 2017). This statistic is used in the process of determining how profitable a bank is. To put it another way, this indicator demonstrates how well a commercial bank makes use of its resources in order to increase its earnings. If a bank has a high return on assets, it means that it is making good use of its capital.

Return on equity (ROE) measures a bank's profit relative to its equity. This ratio shows bank shareholders' return on investment, so it's important. High ROE banks generate cash flow.

Profits increase with ROI. ROE is calculated by dividing Net Income by Average Tax by Total Equity. This ratio reflects the bank's management by showing the return on shareholders' money. Higher ROE indicates more efficient management of shareholder capital (Assfaw, 2018).

The net interest margin refers to the difference between the amount of interest a bank earns and the amount of interest it pays out on loans and deposits. An example of this would be a bank receiving interest revenue but paying interest expenditure to a lender for deposits (NIM). According to Assfaw (2018), the difference between a bank's interest revenue on loans and securities and its interest expenses is what constitutes the institution's "net interest margin." It is a reflection of the effectiveness of banks as well as the expenses associated with intermediation. A bank that maintains a greater net profit rate does better financially and is less likely to fail. The net profit rate is an important ratio for determining a bank's profitability.

To assess the profitability of banks, the CAMEL rating system is an effective monitoring measure (Varaprasad and Rao, 2019; Nguyen, Pham and Nguyen, 2020). This method was first

used in the US in 1979 to measure profitability and bank ratings (Zaidanin, 2020). CAMEL model helps experts examine banking system profitability (Nguyen, Pham, and Nguyen, 2020).

The acronym CAMEL represents; Capital adequacy ratio (CAR), Asset quality (AQ), Management efficiency (ME) and Liquidity. The Capital Adequacy Ratio (CAR) reflects banks' internal wealth to withstand economic crises, according to Madugu, Ibrahim and Amoah (2020). Asset quality reflects the relation between loan portfolio and profitability of the bank. According to Said (2018), non-performing loans pose the greatest threat to commercial banks. As a result, unsuitable interest rates on loans serve as reliable indications of the asset's quality. Management efficiencies may manifest themselves in a variety of forms, including general organizational management, information systems, internal audit and control, strategic and budgetary planning, and so on. Liquidity is defined as the capacity of an institution, in this case a bank, to meet its commitments, most importantly to its depositors. Reschiwati, Syahdina and Handayani (2020) demonstrated that a bank's liquidity adequacy was related to its profits.

The profitability of banks in Ghana may be affected by a number of variables, including bank size, inflation, credit risk, net interest margin, capital sufficiency, and the cost to income ratio (Boateng, 2018). Musa (2018) found that banks in Ghana are extremely leveraged, with debt financing representing for 84 percent of total capital, of which 77 percent is short-term debt. This was identified despite the fact that minimum equity capital has been increased. Bank profitability was positively associated with firm size, foreign ownership, and bank age, while customer deposit growth was negatively associated (Musa, 2018). Other studies have found that commercial banks in Ghana that rely on short-term financing (deposits) lose money. In Ethiopia, capital adequacy, management efficiency, and bank size all have a positive impact on the ROA, ROE, and NIM of private commercial banks. Bank performance suffers as a result of liquidity management (ROE). The research also found that the quality of private commercial

banks' assets was not a reliable indicator of their overall financial success (Varaprasad and Rao, 2019).

Although there have been studies of profitability in commercial banks all over the world, including Ghana, previous findings have been incongruent, making generalizability doubtful. In addition, there has been no substantial investigation of the profitability of commercial banks in Ghana in the wake of the Covid 19 problems. This research will assist to address that gap by giving information on the present profitability condition of Ghana's commercial banks as well as the variables driving that state. This study will also help to identify the causes influencing that state.

1.2 Statement of the Problem

The allocation of funds among subsectors and a nation's economy depends on a robust and efficient banking system in every nation (Kirimi, Kariuki and Ocharo, 2022). The majority of financial institutions are aware of the significance of profitability; yet, they may not be aware of how to boost it or the elements that contribute to it. According to Alarussi and Alhaderi (2018), during times of crisis, some businesses try to protect their financial stability by engaging in risky behavior. However, these behaviors typically make the company's financial situation worse due to the lack of experience and the high level of risk involved. When the economy slows down, it is difficult for banks to keep up with demand and acquire extra resources in order to maintain their current level of profitability (Nguyen et al., 2022).

Evident is the covid 19 Pandemic which caused the world's worst recession by causing a global economic shock (OECD, 2020). Impacting sub-Saharan African countries, the most (African Development Bank, 2021; World Bank, 2021). Numerous studies that looked at how the pandemic affected commercial banks produced findings that varied greatly from one commercial bank in one country to another commercial bank in another countries. Fitriyah et

al. (2021) and Basyir (2021) discovered a relatively sound Islamic commercial bank during the covid 19 crises. Nonetheless, some non-religious commercial banks have reported poor banking conditions during the pandemic (Aldasoro et al., 2020; Ihsan and Hosen, 2021; Ferdinandus, 2020, Nguyen et al., 2022).

Both practitioners and scholars have intensified efforts in identifying the factors that affect bank profitability, as existing strategies employed remain inadequate (Alarussi and Alhaderi, 2017).

The research on the elements that influence a commercial bank's profitability has produced conclusions that are in conflict with one another. For example, Thinh and Le Xuan (2022) discovered that there is a positive association between liquidity and the profitability of banks.

In contrast, the findings of the studies carried out by Parvin et al (2019) and Varaprasad and Rao (2019) show that there is an inverse correlation between liquidity and profitability.

Zaidanin (2021) found a weak positive relationship between capital adequacy, liquidity, loan-to-deposits, and return on assets (2021). Al-Homaidi et al. (2020) found that capital adequacy affects ROA. Asset quality positively affects ROE, while liquidity and have no effect.

Budhathoki and Rai (2020) found that asset quality and capital adequacy affect bank profitability.

In Ghana, factors that contribute to the profitability of banks has been the subject of scant research (Doku, Kpekpena and Boateng, 2019). Liquidity and capital adequacy ratio were two of the characteristics that were explored as potential contributors to a company's profitability.

It was observed that the capital adequacy ratio has a detrimental influence on a company's profitability (Madugu, Ibrahim and Amoah, 2020; Akomeah, Agumeh and Siaw, 2020).

According to Twum and Bathuure's research (2020), there is a favorable correlation between the liquidity ratio and the profitability of commercial banks. Although these studies assessed the factors that influence profitability, they did so on a broad scale with little distinction.

Although earlier studies (Madugu, Ibrahim and Amoah, 2020; Akomeah, Agumeh and Siaw, 2020; Bathuure, 2020) have examined the factors that influence commercial bank profitability. Kirimi, Kariuki and Ocharo (2022) recommended the need to conduct a comparative study among commercial banks. In the meanwhile, Madugu, Ibrahim, and Amoah (2020) examined these issues in relation to both international and indigenous banks in Ghana. However, the consequences of credit risk and capital adequacy ratio were the primary focus of their investigation; the CAMEL methodology as a whole was not considered. A comparative research that utilizes the CAMEL methodology would be able to give more insights into the elements that lead to the disparities in the profitability of banks, therefore adding to practice, theory, and banking literature (Kirimi, Kariuki and Ocharo, 2022). In response to a recent request for the need of doing comparative research, the purpose of this study is to investigate the impact that CAMEL has had on profitability across a number of different banks in Ghana.

1.3 Objectives of the Study

The main objective of the study is to use the CAMEL approach to investigate the factors that influence the profitability of commercial banks in Ghana and to distinguish the impacts by bank ownership.

1. To assess the effect of the CAMEL framework on the profitability of commercial banks in Ghana.
2. To test the difference in the impact of the CAMEL framework on the profitability of commercial banks in Ghana by ownership.

1.4 Research Questions

1. What is the effect of the CAMEL framework on the profitability of commercial bank in Ghana?
2. What is the difference in the influence of the CAMEL framework on the profitability of commercial banks in Ghana by ownership?

1.5 Significance of the Study

Recent studies, particularly as the world faces a pandemic, have revealed lapses in commercial bank profitability around the world (Aldasoro et al., 2020; Ihsan and Hosen, 2021; Ferdinandus, 2020, Nguyen et al., 2022). As a consequence of this, it has become essential to research the elements that influence the profitability of commercial banks and to compare these characteristics according to the ownership of the banks.

It is impossible to overstate the significance of the study on the profitability determinants of Ghanaian banks especially after the covid 19 crises. This research is helpful for a variety of stakeholders, such as management and administration in commercial banks, to discover success and failure indicators in order to enhance the performance of their individual institutions and make the most informed choices possible. It will also aid the government in formulating more effective policies and preventing liquidity crises. For Investors, this study will help them comprehend and protect their investment by revising their investment portfolio. Last but not least, consumers will be given information on the ability of commercial banks to take their deposits based on the performance metrics of such banks. Moreover, this study is of the utmost importance in providing bank managers with a deeper understanding of management issues in order to identify the key profit-boosting variables. This study's findings will also contribute to the existing body of literature.

1.6 Scope of the Study

The purpose of this research is to identify the elements that have an impact on the profitability of commercial banks in Ghana. There are now 23 commercial banks operating in the country of Ghana. On the other hand, the stock market only lists nine of these financial institutions. However, this research used the services of fourteen different commercial banks. Assessments

were made for Capital Adequacy, Asset Quality, Management, Efficiency, and Liquidity (CAMEL). Profitability of banks will be assessed based on ROA.

1.7 Summary of Methodology

The design of the study is explanatory. In addition, a quantitative research methodology was used in order to conduct the evaluation of the aforementioned study goals. This research relied on secondary sources of information (panel data). These figures were taken from the annual financial reports submitted by the nine (9) commercial banks in Ghana that are listed on the stock market. When analyzing the data that was extracted, the STATA version 16 software was used, and descriptive statistics as well as panel regression were used. The panel regression was used to demonstrate the relationship between the dependent (ROA, ROE, NIM) and independent variables (CAMEL) that were used in the study. The mean, standard deviation, maximum, and minimum values were imputed as the descriptive statistics to analyze the trends of the data. Mean, standard deviation, maximum, and minimum values were imputed as the descriptive statistics to analyze the trends of the data.

1.8 Organization of the Study

The research was broken down into five distinct portions. The fascinating topic of the research is presented in the very first chapter of the report. It is broken up into numerous parts, some of which include the history of the study, a description of the problem, research targets and questions, and an explanation of the significance of the study. In conclusion, the second chapter provides an analysis of the relevant literature in both the study area and the primary issue. A review of the theoretical and empirical literature is included in this section. In the third chapter, we will explore the research methodologies that are necessary in order to achieve the aim and goals of this study. The research study's design, as well as the data, procedures, and analytical tools, are all components of the research methodology. The conclusions of the investigation are summarized in chapter four.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

The purpose of this chapter is to examine previous research efforts on topics that are related to the study that is now being conducted. It begins with a conceptual review, then moves on to a theoretical review, and then moves on to an empirical review. In contrast, the conceptual review details how the study variables and goals were investigated. The empirical review summarized the findings of previous studies relevant to the work and finally the summary and conceptual framework of the work.

2.1 Conceptual Review

2.1.1 Concept of Bank Profitability

The term "profit" refers to the amount of money left over after all expenses have been subtracted from sales, and is used as the foundation for determining taxable income and dividend distributions (Hamilton-Ibama, 2020). Profit is the primary sign of a firm's performance and the driving force behind any business, and banks are specific sorts of companies engaged in mobilising deposits and lending (Laeven, Ratnovski and Tong, 2014). Profitability is not just a performance meter but also a requirement for the success of banks under competitive circumstances and the successful implementation of monetary policy. This is because profitability is not only a gauge of performance but also a precondition for success (Sanderson, Hlalefang, Roux and Mutandwa, 2018). The capacity of financial institutions to turn a profit is not only a key indicator of the institutions' overall health and stability but also a significant

indicator of the likelihood of future financial crises (Magdalena, Lucian and Maria, 2021). There are two categories of factors that might influence a bank's profitability: those that are internal and external to the bank. Return on assets (ROA), return on equity (ROE), and net interest margin (NIM) are often used in empirical research to evaluate the profitability of banks (Tan, 2018). A bank's ability to generate profits from its asset management activities while minimizing variations attributable to changes in capital structure is measured by its return on assets (ROA) (Kohlscheen, Murcia, & Contreras, 2018). Many variables affect a bank's profitability. These factors may be associated with a bank's management as a whole, including its capital structure, liquidity, credit risk, loan portfolio, expense, and product or service diversity. For example, the rate of economic development, industry regulation and supervision, inflation, financial deepening, and physical and financial policies are all examples of external variables that might affect the banking sector (Rao & Tekeste, 2012).

2.1.2 Camel Approach

The acronym CAMEL refers to the criteria that serve as the foundation for the bank rating system. Scholars frequently utilise the CAMEL framework to stand in for the more institutionspecific elements (Dang, 2011). Capital sufficiency, asset quality, managerial effectiveness, profits, and liquidity are all important factors. This grading system assigns letter grades to banks based on how well they perform in these areas. These elements' vitality would be indicative of the bank's well-being. CAMEL approach as defined by Sahut and Mili (2011), say Capital adequacy is a metric for assessing a bank's capacity to deal with risk associated with the market value of its assets. Instability in banking solvency is the result of nonperforming loans' impact on the quality of assets held by banks. A bank's management is said to be effective if it can keep daily operations running smoothly despite the bank's financial woes. In order to support future expansion, a bank must be able to recoup some of the resources it has invested. Liquidity refers to a bank's capacity to fulfil short-term commitments.

2.1.2.1 Capital adequacy

Financial stability is shown by a bank's Capital Adequacy ratio (CAR), which is typically used as a measure of the bank's financial health. This ratio measures the bank's resilience in the face of operational risk, credit risk and other forms of risk. Capital is divided into two categories, the first of which is "Tier I" capital, which is made up of "core capital" or "own capital," largely made up of common stock, preferred stock, and retained profits. Tier II capital is an optional second layer of safety for financial institutions. Thus, Tier II Capital consists of unrevealed reserves, subordinate term loans, general provisions, and revaluation reserves (Christopoulos et al, 2011).

2.1.2.2 Assets quality

The quality of a bank's assets is connected to the balance sheet's left side. In most banks, the top management cares most about the quality of the loans they make to consumers since it is what generates the most profit. The terms "asset quality" and "loan quality" are frequently interchanged despite having identical meanings. The cost to the bank and the bank's ability to achieve economies of scale are both impacted by the quality of the assets they hold (Yang and Gan, 2019). The two primary reasons for bank collapse are insufficient liquidity and poor asset quality. High levels of bad loans and widespread insider lending are major causes of the failure of many financial firms (Samuel, 2018; Aspal and Dhawan, 2016). One of the things that might compromise a bank's stability is credit risk. A bank's exposure to credit risk is proportional to the quality of its asset portfolio (Yang and Gan, 2019). A bank's asset quality is influenced by the risks it is exposed to, the rate at which its non-performing loans are increasing or decreasing, and the financial stability of its borrowers.

2.1.2.3 Managerial

The technical prowess, breadth of experience, and depth of knowledge amassed over many years that make up the bank's executive staff are all huge strengths that guarantee the bank's continued success. Because of this, it is accurate to say that a company's fortunes rise and fall on the shoulders of the skill of its management team in overseeing the smooth running of its business operations. It follows that successful businesses enjoy the fruits of quality management's labours (Gautam, 2020).

2.1.2.4 Earnings

Silim argues that in order to survive for a long time, provide value to their shareholders, and maintain and grow their capital, banks need to generate sufficient profits (Silim, 2021). Given that a bank's ability to continue its current and future operations is directly tied to the quality of its revenues and profitability, a wealthy bank should be able to generate sufficient profits to ensure the continued health of the bank and its investors. Two popular measures of a business's profitability are its Return on Assets and Return on Equity. A company's ROI may be calculated as their net profit divided by their total assets. Return on assets (ROA) is a measure of a bank's profitability that eliminates the impact of one-time events on the bank's financial results. Return on equity (ROE) is determined by dividing a company's net income by its total capital. The efficiency with which a bank employs its capital is measured by this ratio (Christopoulos et al., 2011).

2.1.2.4 Liquidity

Liquidity refers to the speed and convenience with which a bank's assets may be sold for their current market worth or in an emergency. In the event of a financial crisis requiring a quick injection of capital, a bank may react quickly because to this asset's feature. Kontu and

Mihanovi (2019) explore the amount, timing, and cost as determinants of liquidity. Maintaining a sizable cash reserve means forgoing potential investments with greater returns. Banks may raise their returns by switching their investments from short-term to long-term securities or loans, but at the cost of taking on more liquidity risk. This means that banks with a high liquidity ratio are safer and less profitable. Financial liquidity ratios are used to determine a company's liquidity. While several ratios may be used to assess a company's liquidity, we employ only two in our CAMEL-based analysis. Total Loans/Total Deposits (L1) and Circulating Assets/Total Assets (CA/TA) are the ratios in question (L2) (Bar and Zeb, 2011).

2.2. Theoretical Review

2.2.1 Trade-off theory

Myers was the first to introduce the term "trade-off theory" to express the tax-bankruptcy perspective in 1984. Capital structure theorists propose that a company's optimal amount of leverage may be determined by balancing the tax benefits of debt with the costs of bankruptcy. In addition, the optimal level of debt is the point at which the marginal benefit of debt (tax deductibility of interest payments) is equal to the marginal cost of debt (growing default risk). Changes in leverage over time and variation in leverage across firms may be explained by shifts in the marginal interest tax shield and/or the marginal cost of default, according to this idea. Conventional interpretations of the tradeoff theory have predicted that more successful enterprises will have greater leverage ratios. However, the actual evidence suggests the opposite: that more profitable firms will have lower leverage ratios (Zuhroh, 2019). The primary goal of every business is to maximise its value by determining the ideal debt ratio, which may involve exchanging some of the firm's equity for debt. To achieve the best possible financial standing, it is necessary to strike a balance between the many advantages and disadvantages of using debt financing, as described by trade-off theory. Decreased discretionary cash flow is another disciplining effect of debt (Gansuwan & Onel, 2012). The tax exemption is a significant part of the idea as well. By reducing their taxable revenue,

companies may save more on their interest payments on loans. Increasing their debt loads is one strategy some businesses employ to get the most out of their tax exemptions. The tradeoff theory predicts that a company's profitability will increase if it makes full use of the tax benefits provided by debt, as stated by Niu (2008). However, as Gangeni (2006) explains in his research, there is a limit to how much a company may borrow because the actual cost of debt reduces profitability, which in turn lessens the efficiency of the tax shield. The Theory of the Firm predicts that a company's performance will have a beneficial effect on its long-term debt since more profitable businesses pose less of a risk to their debt holders and can afford to take on more debt.

2.2.3 Pecking Order Theory

The theory, developed by Stewart Myers and Nicolas Majluf in 1984, asserts that managers analyse financial sources in a hierarchy. The corporate debt ratio is expected to indicate a hierarchy of funding sources, with internal finance taking precedence over debt and debt taking precedence over equity. According to the Pecking Order Theory, which posits that the cost of financing increases with asymmetric knowledge (Murray & Vidhan, 2013). Financing from the inside is preferable because it is less susceptible to the adverse selection issue, which occurs when asymmetric knowledge is used to one's advantage. The stock is the least desirable because investors assume that management who issue additional equity do so because they believe the business is overpriced and wish to capitalise on this belief. As a result, the price of a company's stock usually falls when an equity issue is made. Board confidence in an investment's profitability and share price make debt issuance preferable to equity (Vasiliou et al., 2009). The Pecking Order Theory predicts that a firm's profitability will have a negative influence on its long-term debt as better profitability shows the firm's funds are adequate to satisfy the financing need.

2.3 Empirical review

2.3.1 CAMEL framework on the profitability of commercial banks

Saif-Alyousfi, Saha, and Md-Rus (2017) evaluate Saudi bank profitability from 2000 to 2014 using a pooled ordinary least square and fixed effect model. Local banks are more profitable than foreign banks, according to the report. Banks, both domestic and international, with greater capital are more successful. Non-performing loan ratios at foreign banks are higher because of the greater credit risk they assume. As opposed to domestic banks, international banks have far higher operational costs to total income ratios, which is inversely connected to profitability. Therefore, the findings also show that bigger institutions are less profitable.

Kaur et al. (2015) analyzed the monetary performance of a few chosen Indian public sector banks between 2009 and 2014 using the CAMEL Method. Bank of Baroda ranked highest across the board for CAMEL metrics; Puchab International Bank ranked second for Capital Adequacy, Management Efficiency, and Earning Capacity; the Bank of India ranked third for Asset Quality; and the State Bank of India ranked dead last despite having the most assets and reserves. Similarly, Alemu and Aweke (2017) found that of the six private commercial banks in Ethiopia, WEGAGEN and NIB banks had the highest capital adequacy characteristics, followed by UB Bank and, once again, DB Bank was rated worst.

When analyzing what variables influence bank profitability in Nigeria, Echeboba, Egbunike, and Ezu (2014) used the CAMEL model. Liquidity was shown to be the most important factor in the profitability of Nigerian commercial banks, whereas capital adequacy, asset quality,

management effectiveness, and profits had little influence in the banks' success over the study's time period (2001-2010).

Abate and Mesfin (2019) analyze nine commercial banks in Ethiopia from 2007 to 2016 using internal, external, and macroeconomic variables. For that purpose, a quantitative research strategy was used, and 9 commercial banks were randomly chosen from a pool of 18 in Ethiopia. The raw data acquired through audited financial accounts was analysed using a random effect regression model. Banks' profits are positively related to their levels of capital, leverage, liquidity, and ownership, as shown by the study's findings.

Siva and Natarjan (2011) studied CAMEL's impact on SBI Groups' performance. CAMEL scanning helps banks diagnose their financial situation and alerts them to take precautionary actions to guarantee their sustainability.

Supiyadi, Arief and Nugraha (2019) analyse the factors, both internal and external, that have contributed to the growth of Indonesia's sharia banks from 2010 to 2017. ROI was used to measure bank profitability based on internal and external factors. External influences affect profitability. Bank liquidity has a large positive impact on bank profitability, whereas internal characteristics like capital adequacy, credit risk, and asset size have a large negative effect. Sharia banks will have a competitive edge over traditional banks because they may enhance liquidity, strengthen their capital structure, decrease their assets, and cut their credit risk in anticipation of external circumstances.

Magoma, Mbwambo, Sallwa, and Mwasha (2021) analyze Tanzania's biggest financial institutions, the NMB and CRDB. Fixed Effect Panel Regression in SPSS version 23 was used to investigate the relationship between CAMEL characteristics and banks' ROE. Commercial banks in Tanzania are impacted by profitability and liquidity. Inconsistent effects from the other three components on ROE, a common indicator of financial health.

Shukla, Tewari, and Dubey (2013) study rural bank characteristics and commercial bank profitability. The study uses 1971-72-to-2011-2012 time series data. According to their findings, the percentage of bank branches located in rural areas grew between 1971–1972 and 1990–1991 but has since decreased as a result of a policy change from branch growth to consolidation in rural banking. The report found that for every 100 rupees brought in through deposits, only 60 were distributed as credits to the agricultural sector. This shows that nonperforming assets should be reduced and loan supply should be individualised.

Getahun (2015) investigated 14 Ethiopian commercial banks using the CAMEL criteria and found that capital adequacy, asset quality, and managerial efficiency all had negative connections with both measures of profitability, whereas profits and liquidity showed positive associations. Eric et al. (2017) discovered that a bank's asset quality influences profitability and performance. In conclusion, asset quality influences banks' ROA. Financial success is measured by ROI, ROE, and NIM. Assfaw (2018) found that asset quality, earning capabilities, and bank size impact Ethiopian private banks' financial performance. Management at the banks should therefore concentrate on bolstering the aforementioned major factors.

Javaid et al. (2011) studied the top 10 banks in Pakistan's 2004-2008 profitability. Only internal issues mattered to them. Javaid et al. (2011) used the pooled ordinary least square (POLS) technique to examine the impact of assets, loans, equity, and deposits on banks' return on assets (ROA). Empirical study shows that these elements affect a firm's profitability. Due to diseconomies of scale, a bigger total asset value does not always lead to a higher profit level.

Jha and Hui (2012) used the CAMEL model to compare Nepalese commercial banks' financial performance. Capital adequacy, non-performing loan, interest expenses to total loan, net interest margin, and credit-to-deposit ratios were used in regression models to forecast financial performance (ROA and ROE). Return on assets (ROA) was influenced by capital adequacy

ratio, interest expenses to total loan, and net interest margin, while ROE was impacted by capital adequacy ratio. Capital adequacy ratio, interest cost to total loan, and net interest margin affected return on assets (ROA), whereas capital adequacy ratio affected return on equity (ROE).

Capital sufficiency, managerial quality, and asset quality were found to be the most important factors in Bastan et al (2016) 's evaluation of Iranian financial institutions. Contrarily, Kandel's (2019) study discovered that the asset quality ratio, earning potential, and liquidity are the major determinants of a bank's financial success. In addition, Ferrouhi (2014) used a camel approach to examine the success of key Moroccan financial institutions between 2001 and 2011. According to his findings, all six banks profited within the study's time frame. His research, based on a weighted average of the relevant ratios, revealed that certain financial institutions fared better than others.

The CAMEL model was used by Khanifar et al. (2016) to research and compare the financial performance of public and private business banks from 2006 to 2009. Eight commercial banks were chosen for the study's statistical sample (4 public and 4 private) using a judgmental selection strategy. According to the findings, private banks performed better than government banks in terms of liquidity and profits, and there was no discernible difference between the two in terms of overall performance.

Using the CAMEL framework, Nguyen, Nguyen, and Pham (2020) analyze the financial outcomes for commercial banks in Vietnam. The "CAMEL" indicators of capital adequacy, asset quality, management effectiveness, and bank liquidity are the independent variables in three econometric models, while the financial performance of commercial banks is represented by return on assets (ROA), return on equity (ROE), and net interest margin (NIM) ("dependent variables"). Thirty-one Vietnamese commercial banks were included in the study's sample

throughout a six-year time period, from 2013 to 2018. According to the data, the fixed effects model (FEM) is superior to the ordinary least squares (OLS) and the random effects models (REM). Results for Vietnamese commercial banks were shown to be influenced by factors like capital sufficiency, asset quality, liquidity, and managerial efficiency.

Kumarasinghe and Jahfer (2021) analyse the financial standing of licenced commercial banks in Sri Lanka from 2010 to 2019. This applies to both public and commercial financial institutions. The CAMEL methodology was used to assess financial institution performance using return on assets as the dependent variable and capital sufficiency, asset quality, management quality, earnings capacity, and liquidity condition as the independent variables. Capital adequacy and liquidity position were shown to positively correlate with the financial performance of commercial banks in Sri Lanka throughout the study period, however other factors failed to demonstrate a meaningful association.

Afroj, (2022) analyses the financial stability of 35 different banks in Bangladesh from 2010 to 2015, along with the factors that have an impact on their stability. Panel regression was used in the second phase to identify the factors that contribute to a bank's health. Empirical evidence shows that Islamic banks in Bangladesh are more solvent and more productive than their conventional and Islamic window banking counterparts. Bank size, loan recovery, salary, and banking sector growth all have a favourable impact on the bank's financial health in Bangladesh. However, loan assets have a negative impact.

2.3.2 CAMEL framework on the profitability of commercial banks by ownership.

Saif-Alyousfi, Saha and Md-Rus (2017) compared and contrasted the profitability of domestic and international banks. This research addresses that need by applying a pooled OLS and fixed effect model to analyse Saudi bank profitability according to CAMEL framework parameters

from 2000-2014. The findings point to domestic financial institutions as being more lucrative than their international counterparts. The study's authors also found that local and foreign banks with higher capital fared better. The profitability of a bank decreases as the percentage of nonperforming loans rises, and the credit risk of an international bank increases. They also found that the substantial increase in lending activities has helped local banks' bottom lines while having a detrimental effect on the multinational banks' profits in the country.

Kumari (2017) used CAMEL ratings to analyze the financial performance of multinational commercial banks operating in Sri Lanka from 2008 to 2014. It was found that international banks perform well in terms of capital adequacy and profitability but marginally in other areas. Macroeconomic variables do not affect return on equity (ROE), but loan loss provision, bank size, and leverage ratio do. Robin et al. (2018) and Yesmine and Bhuiyah (2017) found that capital ratio, asset quality, and bank size impact performance (2015). Where the ownership type has a negative impact, capital to assets ratios and bank size have positive ones, and vice versa. It demonstrates that Bangladesh's private banks are more competent than its governmental banks.

Gupta and Mahakud (2020) assess institutional, industry, and macroeconomic variables on India's commercial banks. Gupta and Mahakud (2020) evaluate the impact of bank size, capital ratio, risk, cost-to-income ratio, financing cost, revenue diversification, labor productivity, and age on bank performance. Private banks are more profitable than public sector banks.

The CAMEL grading method was used by Mishra, Gadhia, Bibhu, and Biswabas (2013) to examine the effectiveness of private and public banks in India from 2000-2011. Based on their findings, it was determined that private sector banks are at the top of the list with their performance. The earlier study, on the other hand, attempted to quantify the efficiency change of those selected banks between 2010 and 2012 using a frontier-based non-parametric approach called Data Envelopment Analysis (DEA).

Moon (2018) studied the performance of the Malaysian banking sector from 2013 to 2017 using the CAMEL framework and standard accounting indicators of ROA, ROE, and economic value added (EVA). While liquidity didn't affect any models, the CAMEL factors did affect ROA, ROE, and EVA.

Suvita and Xiaofeng (2012) evaluate the performance of commercial banks in Nepal with various ownership arrangements to identify success drivers. Eighteen commercial banks' financial data from 2005-2010 was analyzed. Public sector banks are less effective than private sector banks, whereas private domestic banks are on par with foreign-owned (JV) rivals. Capital adequacy ratio, interest expenses to total loan, and net interest margin all have a large influence on return on assets, whereas capital adequacy ratio impacts return on equity.

Foreign banks frequently contribute superior know-how and technical competence, according to Olwen and Shipho (2011). They boost financial system stability by drawing on local banks' liquidity and giving access to global markets. They also raise competitive pressure on local banks, which improves financial intermediation. Nachum and Ogbechie (2019) propose that foreign-owned banks are more profitable in emerging nations than their indigenous equivalents and less profitable in industrial countries. Domestic banks have an advantage over foreign banks owing to their local market understanding.

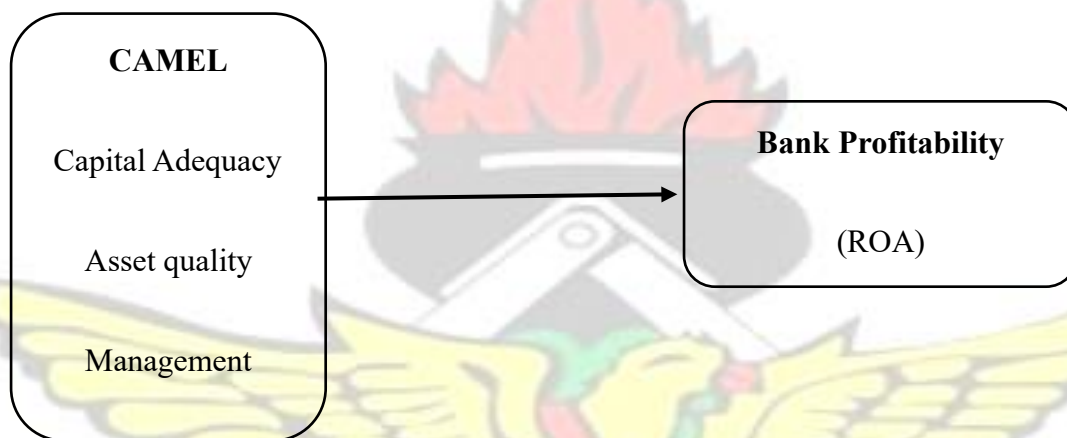
2.4 Conceptual Framework

According to the CAMEL framework, the five components evaluate total bank performance from different viewpoints that are directly related to bank profitability. First of all, capital adequacy evaluates the bank's ability to sustain its current level of commercial activity and grow its operations. The asset quality metric is used to evaluate the potential impact on the bank's loan loss provision of assets held or acquired by the bank. Management entails the ability to run and manage the bank's operations with sufficient knowledge and skill, both of which might affect the bank's losses in a fraud case. The next metric to consider is the bank's earnings,

which should reflect the return on assets and equity for the shareholders. Finally, we have the liquidity variable, which assesses the bank's preparedness in terms of cash and short-term assets. As a result of the above, the factors in the CAMEL framework can impact banks' profitability as measured by return on assets (ROA).

Independent variable

Dependent Variable



Source: Author's Construct (2022)

2.5 Summary

According to the study presented in the aforementioned literature, some researchers have employed CAMEL components to evaluate the profitability of banks, however, the majority of researchers have relied on ROA as a representation of banks' financial health. Others assess the bank's financial position in comparison to other banks. The study derived its financial foundation from the trade-off theory as well as the pecking order concept. One way to gain a deeper understanding of the elements that contribute to the variations in profitability across different banks is to conduct a comparative analysis using the CAMEL methodology. This research will carry out in response to a recent request for the necessity of doing comparative research. The purpose of this research is to investigate how CAMEL affects the profitability of banks in Ghana.

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CHAPTER THREE **METHODOLOGY**

3.0 Introduction

Using CAMEL, the research examines variables affecting commercial bank profitability. This chapter explains the study's techniques and processes. Design, data, methodology, model definition, diagnostic test, and variable description. It described how to gather and analyze data.

3.1 Research Design

The research aims to identify profit-boosting elements. This study uses quantitative research and positivism to attain its goal. Quantitative research uses numbers to analyze variable connections (Nardi, 2018), Queirós, Faria, and Almeida (2017) say quantitative research builds and applies mathematical theories, models, and hypotheses. Positivists use arithmetic equations, computations, extrapolations, and expressions to draw conclusions (Iofrida et al., 2018).

The research needed panel data to fulfill its goal. Multiple banks' data were gathered throughout time (from 2010 to 2021). This study used a panel design. According to Wang et al. (2017), a panel design is employed when researchers sample a group of individuals and assess variables

at many time points. This approach is good since Ghana has various commercial banks, therefore to get varied outcomes, we need to integrate them. Also, the factors that influence the profitability of these diverse banks were measured over 12 years (2010-2021). Hence, the use of panel research design enabled the use of multiple banks over multiple periods.

The use of a quantitative approach to research through a positivist worldview and the panel study designs is ideal because this study aims to examine the factors that influence profitability using variables (ROA, ROE, NIM, CAMEL) that are quantitative. Furthermore, the quantitative research approach and positivist worldview support the application of mathematical methods to examine relationships among variables to conclude. Likewise, the panel study design encourages the usage of multiple banks and the assessment of these banks over a period of time.

3.2 Data

3.2.1 population

The research targeted BOG-registered commercial banks in 2021. The research included data from 2010 to 2021 from commercial banks. This research employed purposeful sampling.

Purposive sampling lets researchers choose participants depending on their attributes (Campbell et al. 2020). This analysis included Ghana Stock Exchange-listed commercial banks. Ghana's stock market lists nine banks (Akomeah, Agumeh, and Siaw, 2020). Nine banks were utilized.

3.2.2 Data source

This research used secondary data from Ghana Stock Exchange financial reports. Secondary data is data accumulated over time, which was not obtained firsthand from respondents (Chatha, Butt, and Tariq, 2015). Secondary data was ideal for this study because the variables used in this study (ROE, ROA, NIM, CAMEL) are best obtained from the day-to-day reports

from these banks detailing the right statistic to measure these variables. Also, ROE, ROA, NIM and CAMEL variables are best to be assessed based on the systematic calculation recognizes internationally and nationally by the Bank of Ghana and hence cannot be assessed from the perspectives of employees of these banks. From their financial reports, a panel dataset was created describing commercial bank profitability (ROE, ROA, NIM) and the CAMEL technique. The 12-year data span (2010 – 2021).

3.3 Estimation Technique

Data was analyzed using Stata version 16. Banks' profitability was analyzed using descriptive and static panel regression.

The average mean score and standard deviations were used to summarize the data and analyze its journey (Garson, 2012). McNabb (2015) says academics may employ cumulative frequency distribution, histograms, box plots, frequency polygons, bar charts, pie charts, and scatter diagrams to convey research topics. This study's descriptive measures were minimum, maximum, mean, and standard deviation. Firm performance and corporate sustainability reporting are studied factors.

This research used static panel regression since the data was obtained from 2010 to 2021. Chen et al. (2002) define panel data as multidimensional, repeating observations. Static panel regression estimated cross-section-specific effects, temporal effects, or both to investigate unobserved heterogeneity. Pooled OLS variation, fixed effect, and random effect models are static panel data models (Hamiye Beyaztas, and Bandyopadhyay, 2020). Pooled OLS (Ordinary Least Square) ignores data's time and individual dimensions. Fixed effects models consider individual differences. Random model removes biases from unobserved and changing factors (Choudhary, Kumar, and Singh, 2022). Hausman's specification test was employed to establish if the fixed or random effect was true.

These three estimations were used in this study to examine the factors that influence the profitability of the cross-section of banks in this study (Pooled OLS), determine the difference of these factors' effects among these banks (Fixed effects), and examine the degree to which these factors have affected the profitability of these banks over time (random effect). Also, the effectiveness of panel regression has been demonstrated in the studies by Bansal, Singh, Kumar, and Gupta, (2018) and Abduh, Omar, & Mesic, (2017) who examined the factors that influence profitability in Indian and Malaysian banks respectively.

3.4 Model specification

The study used a static panel regression model incorporating the pooled OLS model, fixed effect model, and random effect model. The models are given below;

$$ROE_{it} = \beta_{0i} + \beta_1 CA_{it} + \beta_2 AQ_{it} + \beta_3 MS_{it} + \beta_4 L_{it} + \beta_5 E_{it} + \sum_{k=1}^3 CONTROL_{i,t} + u_{i,t}$$

$$ROA_{it} = \beta_{0i} + \beta_1 CA_{it} + \beta_2 AQ_{it} + \beta_3 MS_{it} + \beta_4 L_{it} + \beta_5 E_{it} + \sum_{k=1}^3 CONTROL_{i,t} + u_{i,t}$$

$$NIM_{it} = \beta_{0i} + \beta_1 CA_{it} + \beta_2 AQ_{it} + \beta_3 MS_{it} + \beta_4 L_{it} + \beta_5 E_{it} + \sum_{k=1}^3 CONTROL_{i,t} + u_{i,t}$$

where β_{0i} is the y-intercept of bank i; ROE_{it} , ROA_{it} , NIM_{it} is the return on equity, return on asset and net income margin of each bank i at time t; CA_{it} is the capital adequacy ratio of bank i at time t; AQ_{it} is the asset quality of bank i at time t; MS_{it} is the management soundness of bank i at time t; L_{it} is the liquidity of bank i at time t; E_{it} is the earning management of bank i at time t and $u_{i,t}$ the error term of bank i at time t or between bank's error.

3.5 Diagnostic test

The research used diagnostic tests to verify data was suitable for static panel regression. This research employed Hausman, multicollinearity, unit root, and serial correlation tests.

3.5.1 Hausman Test

Hausman's (1978) test compared RE and FE estimators by comparing random- and fixed-effect models. The Durbin-Wu-Hausman test compares two estimators, one of which is presumed to be more accurate. This exam evaluates empirical and theoretical facts. In panel regression, this method is used to clarify the relationship between dependent and independent variables by comparing random and fixed effects.

3.5.2 Multicollinearity test

Multicollinearity develops when numerous independent variables have high relationships (Daoud, 2017). Multicollinearity may lead to a skewed or misleading outcome when trying to forecast or gain insight into a dependent variable in a statistical model. Variance of the Inflation Factor (VIF) was employed in this study. The variance inflation factor (VIF) measures how linearly connected predictor variables inflate regression coefficient variance. 1 shows no association, 2–5 moderate correlation, and 6–10 great correlation (Kim, 2019).

3.5.3 Unit root

This investigation made use of a time-series data set. Time series data are notoriously prone to stationarity, as stated by (Clements, and Hendry, 2001). Caused by the failure of a temporal shift to induce a corresponding shift in distribution. Panel data analysis relies on the stationarity of the data series to draw conclusions and improve the quality of the resulting models. A data series is stable if its mean and variance are constant across time and if the covariance between

the two extreme periods relies solely on the lag and not the actual time (Nason, 2006). The series' integrated level was determined using Augmented Dickey-Fuller (ADF) (Dickey and Fuller, 1979), Phillips and Perron (1988), and Kwiatkowski et al. (1992).

3.5.4 Test for serial correlation

Panel regression assumes variable independence. However, serial correlation occurs when variables are correlated in a specific order. Due to serial correlation between variables, ordinary least square model-derived regression estimates are still unbiased but inefficient. We used Durbin Watson Testing to check for serial correlation in the data. Autocorrelation in statistical model residuals can be quantified using the Durbin-Watson statistic. Always, Durbin-Watson's statistics lie between zero and four. Sample uncorrelation is indicated by a score of two, positive autocorrelation by values between minus two and plus four, and negative autocorrelation by values between minus four and plus two.



3.6 Variable description and measurement

There were three variables in this study. Dependent (profitability) and independent (CAMEL) and control variables (firm size, Ownership and firm age). Below are the proxies used to measure profitability and CAMEL. All variables were obtained from the financial report (FR) of listed manufacturing firms.

Variable	Measurement/formula	Source	References	Expected sign
Dependent (firm performance)				
ROA	net profits divided by total assets of a firm i at time t	FR	Sivalingam, and Kengatharan, (2018)	
ROE	net profits divided by shareholder equity of a firm i at time t	FR	Sivalingam, and Kengatharan (2018)	
NIM	Net interest income to total assets		Kirimi, Kariuki, and Ocharo, (2022)	
Independent variable				
Capital adequacy	Capital to Assets = Equity Capital & Reserves/Total Assets		Saeed, Shahid, and Tirmizi, (2020)	+/-
Asset quality	NPLs to Gross advances = Total NPLs/Total Loans (gross)		Saeed, Shahid, and Tirmizi, (2020)	+/-
Management soundness	Operating Expenses to Total Assets=Non-markup Expenses (operating)/Total Assets		Saeed, Shahid, and Tirmizi, (2020)	+/-
Earning management	Interest income to total assets		Kirimi, Kariuki, and Ocharo, (2022)	+/-
Liquidity	Loans to Deposits = Gross Advances (or Loans)/Borrowing and Deposits		Saeed, Shahid, and Tirmizi, (2020)	+/-
Control variables				
Firm size	Natural log of the firm's total asset		Drempetic, Klein, and Zwergel, (2020)	+/-
Type of Ownership	Dummy variable 0" Local firms" 1" foreign firms"			+/-
Firm age	How long has the firm been listed		Ali, Hameedi, and Almagtome, (2019)	+/-

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3.7 Summary of Chapter

This research examined commercial bank profitability. This analysis chose Ghanaian commercial banks with accessible financial reports. Profitability and independence data were extracted (CAMEL). NIM, ROA, and ROE measure profitability. Model controls included company size, age, and ownership structure. Using a panel research methodology and a positivist perspective, data was gathered from commercial bank financial reports. Static panel regression was used to determine profitability variables.



CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents and interprets study results. Variable descriptions, correlations, diagnostic tests, and random effect model estimates are included. This is followed by an interpretation and discussion of the results with existing literature and theories.

Table 4. 1 Descriptive Analysis

Variables	Mean	SD	CV	No.Obs.
ROA	2.143	0.303	0.1413	108
ROE	1.290	0.289	0.2240	108
NIM	30.717	3.068	0.0998	108
CA	15.738	6.297	0.0017	108
AQ	0.368	0.035	0.0951	108
EM	0.539	0.483	0.8961	108
MS	4.210	0.499	2.3764	108
LIQ	0.738	0.408	0.5528	108
OWN	0.282	0.460	1.6312	108
FA	15.731	0.246	0.0156	108
SIZE	9.825	0.746	0.0759	108

Source: Authors Computation (2022);*NB where ROA, ROE, and NIM are the return on equity, return on asset and net income margin, CA is the capital adequacy ratio, AQ is the asset quality MS is the management soundness, LIQ is the liquidity, EM is the earning management, OWN is the ownership type, SIZE is the bank size, and FA is the bank age*

Descriptive statistics allow data to be summarized by frequency and proportion. Descriptive statistics provide researchers confidence and insight into their raw data using frequency and percentage distributions (Garson, 2012). Lind (2008) says researchers may use histograms, box plots, frequency polygons, bar charts, pie charts, and scatter diagrams to explain their investigations. This study's researcher used central tendency metrics (mean, standard deviation, coefficient of variation) to categorize variables. Mean values describe raw data, while standard deviation demonstrates how effectively they reflect data (Field, 2009). Mean and standard deviations indicate how well statistical mean matches data (Kasimu et al., 2020).

Table 4.1 summarizes descriptive analysis statistics.

High coefficient of variation implies explanation dispersion. According to the data, ME had a mean and standard deviation of $M=0.539$ and $St.dv=0.483$, and MS had a mean and standard deviation of $M=4.210$ and $St.dv=0.499$, indicating that the operating profit to net income ratio is a key indicator of the bank's profitability, especially in terms of cost control (Aldasoro et al., 2020; Ihsan and Hosen, 2021; Ferdinandus, 2020, Nguyen et al., 2022). High operational profit margins indicate a low-cost operating style, effective cost management, and rising bank revenues over expenses. $M=0.738$ and $St.dv=0.408$ for LIQ imply that the total loan deposit ratio is over 73%. $M=0.368$ and $St.dv=0.035$ for AQ, while $M=15.738$ and $St.dv=6.297$ for CA. ROE, ROA, and NIM are all non-negative.

4.2 Correlation Analysis

Correlation links dependent and independent factors. It searches for multicollinearity among the study's independent variables. Table 4.2 summarizes correlations for financial performance factors. Correlation measures the intensity and direction of two variables' relationship. Absolute coefficient indices reflect the magnitude of the relationship between variables, while the sign (positive or negative) denotes the direction. The correlation matrix shows independent variable multicollinearity. When the independent variables are strongly related ($r=0.9$ or higher), it's hard to separate their influence on the dependent variable. Another predictor variable may predict one virtually precisely (Akuoko, Aggrey, and Arhen, 2020; Agyekumet al., 2016).

Table 4. 2 Correlation Matrix

S/N	Variables	1	2	3	4	5	6	7	8	9	10	11
1	ROA	1										
2	ROE	0.2949*	1									
3	NIM	0.1939*	0.0982*	1								
4	CA	0.0280	0.2640*	-0.0394	1							
5	AQ	0.1803*	0.0994*	0.0890*	0.0342	1						
6	EM	0.0438*	0.0928	0.0399	0.0499*	-0.0939	1					
7	MS	0.0440*	0.0442*	0.0209	0.0299*	0.5214*	0.2820*	1				
8	LIQ	0.0030	0.0473*	0.0579*	0.9904*	0.9942*	0.0594*	0.035***	1			
9	OWN	0.0449*	0.091*	0.0298	0.3949*	0.2839	0.0489*	0.052***	0.4781*	1		
10	FA	0.9839*	0.022***	0.2035*	0.0922	0.0342	0.5639	0.159***	0.0298*	0.1360*	1	
11	SIZE	-0.049*	0.035***	0.0248	0.0240	0.0334	0.3709*	0.054***	0.1442*	0.1809*	-0.0398	1

Source: Authors Computation (2022); NB where ROA, ROE, and NIM are the return on equity, return on asset and net income margin, CA is the capital adequacy ratio, AQ is the asset quality MS is the management soundness, LIQ is the liquidity, EM is the earning management, OWN is the ownership type, SIZE is the bank size, and FA is the bank age



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Notably, as expected, return on assets is positively correlated with (Earning management, Management soundness, Asset quality, Type of Ownership, and Firm Age) which is statistically significant at the 10% level. However, Liquidity and Capital adequacy are positively correlated with return on assets but statistically insignificant. Furthermore, the correlation matrix identified the potential multicollinearity of independent variables. In a circumstance in which the independent variables are strongly linked ($r=0.9$ or more) such that it is impossible to disentangle the effects of the independent on the dependent variable. In other words, one of the predictor variables may be predicted with near-perfect accuracy by another predictor variable (Akuoko, Aggrey & Arhen, 2020; Agyekumet al., 2016). Goldberg (2019). This implies that low collinearity between independent variables means that the (Earning management, Management soundness, Asset quality, Type of Ownership, Firm Age, Firm Size, Liquidity, and Capital adequacy) do not influence each other in the impact on the financial performance resulting in the independence of the variables.

4.4 Diagnostics Test

First, it was determined if the model needed a fixed or random effect. Table 4.3 shows the Hausman test and chi-square results. Random effect is the null hypothesis, whereas fixed effect is the alternative. 0.6819 chi-square and 14.875 p-value. Random effect model was utilized.

Before the model is estimated, a diagnostic analysis was done to determine the appropriateness and robustness. Table 4.3 summarizes assumptions required for a panel regression study to determine the influence of capital structure on financial performance with regulation as a moderator. The table shows pre- and post-diagnostics. The Levin-Lin-Chu Unit-Root Assess was used to test panel data stationarity. Before modeling, this was needed. Levin-Lin-Chu UnitRoot Test null hypothesis is non-stationarity. The results of the test indicate that the variables included in the panel data are stationary at a 5% level of significance ($Z=-1.4584$, $pvalue=0.0276$).

Table 4. 3 Diagnostic Test

Fixed-Random Effect		Heteroscedasticity		Panel Unit Root Test	
Hausman Test		studentized Breusch-Pagan test		Levin-Lin-Chu Unit-Root Test	
P-value	14.875	BP	17.620	Z	1.4584
Chi-square	0.6819	P-value	0.7251	P-value	0.0276

Source: Authors Computation (2022)

By considering the heteroscedasticity of the regression model using the studentized Breusch-Pagan test one can see that the residual analysis shows a constant variance of the error. This is because the studentized Breusch-Pagan test has the null hypothesis as errors are constant (homoscedasticity of error), and the resulting p-value of 0.7251 was greater than 0.05. Thus, the model presented was robust for the analysis.

4.5 Regression Results

The study employs static panel estimating techniques to get a rough estimate of the model. In the beginning, the model is estimated using cross-section pooled OLS. All coefficients have anticipated signs, and most are significant at 1%. Most RE model coefficients are statistically significant at the 5% level or higher, and the computed results have the predicted indications. Both models are well-fitted, with R² values over 0.20, according to goodness-of-fit tests. The Breusch-Pagan LM test rejects the FE null hypothesis, demonstrating the RE model is more reliable than the cross-section pooled OLS. The Hausman test compares RE and FE models directly. The data disprove the RE model's null hypothesis frequently. This study concludes that the RE model yields more reliable results. The diagnostic tests all show that the FE model was incorrectly selected. In particular, the residuals are serially correlated and the error variance is unequal.

Table 4. 4 Pooled OLS Estimates

Variables	Model1 (ROA)	Model2 (ROE)	Model3 (NIM)
Constant	0.0248** (0.0124)	−0.0477*** (0.0132)	0.0802* (0.0416)
CA	0.0274** (0.012)	−0.0296*** (0.00621)	0.0468* (0.0244)
AQ	0.0502** (0.0211)	0.0413*** (0.0028)	−0.0327* (0.0177)
EM	0.0186*** (0.0063)	0.0671*** (0.0199)	0.0260** (0.0103)
MS	−0.0477*** (0.0132)	0.0167** (0.0082)	−0.100*** (0.0169)
LIQ	0.0477*** (0.0132)	0.0120*** (0.0032)	0.0150 (0.0428)
OWN	0.0609** (0.0289)	−0.0439** (0.0161)	0.0167** (0.0078)
FA	−0.0477** (0.0187)	0.0411** (0.0251)	0.0609** (0.0284)
SIZE	0.0383** (0.0152)	−0.0391*** (0.0109)	−0.0477*** (0.0184)
R-square	0.339	0.381	0.259

Source: Authors Computation (2022); NB where ROA, ROE, and NIM are the return on equity, return on asset and net income margin, CA is the capital adequacy ratio, AQ is the asset quality MS is the management soundness, LIQ is the liquidity, EM is the earning management, OWN is the ownership type, SIZE is the bank size, and FA is the bank age

Model 1 shows that return on assets positively affects CAMEL (Capital adequacy, Asset quality, Liquidity, and earning management) by 1%, 5%, and 10%. ROA negatively affects management soundness, according (Saeed, Shahid, and Tirmizi, 2020). The research offers three control factors that positively affect ROA: company age, size, and ownership type. Model 2 shows that ROE positively affects CAMEL (Asset quality, Management soundness, and Liquidity). Capital adequacy reduces ROE (Sivalingam and Kengatharan, 2018). Liquidity, Capital sufficiency, and Earnings Management have a favorable influence on NIM, whereas Asset Quality and Management Soundness have a negative effect (Kiriimi, Kariuki, and Ocharo, 2022; Christopoulos et al., 2011).

Table 4. 5 Random Effect Estimates

Variables	Model1 (ROA)	Model2 (ROE)	Model3 (NIM)
Constant	0.267*** (0.0623)	0.340*** (0.0676)	163*** (0.0211)
CA	0.0131*** (0.0034)	0.0758* (0.0426)	0.0248** (0.0124)

AQ	0.0186*** (0.0063)	0.0299*** (0.0084)	0.0221*** (0.0049)
EM	0.0446 (0.2110)	0.0443 (0.0328)	0.0334*** (0.0069)
MS	0.0206*** (0.0064)	0.0301*** (0.0082)	0.0170 (0.0141)
LIQ	-0.0254*** (0.0067)	-0.0295*** (0.0079)	0.0274** (0.0129)
OWN	0.0335* (0.0188)	-0.0179** (0.0075)	-0.0183*** (0.0063)
FA	0.267*** (0.062)	0.0345*** (0.0022)	0.239*** (0.0719)
SIZE	-0.0296*** (0.00621)	-0.0532 (0.0929)	0.0231** (0.0098)
R-square	0.361	0.286	0.482

Source: Authors Computation (2022); NB where ROA, ROE, and NIM are the return on equity, return on asset and net income margin, CA is the capital adequacy ratio, AQ is the asset quality MS is the management soundness, LIQ is the liquidity, EM is the earning management, OWN is the ownership type, SIZE is the bank size, and FA is the bank age

Model 1 shows that return on assets has a positive, statistically significant influence on CAMEL (Capital adequacy, Asset quality, Management soundness, and earning management). However, ROA reduces liquidity (Yang and Gan, 2019). The research offers three control factors that positively affect ROA: company age, size, and ownership type. Model 2 shows that ROE positively affects CAMEL (Capital adequacy, Asset quality, Management soundness, and earning management). Liquidity hurts ROE, per (Sivalingam and Kengatharan, 2018; Yang and Gan, 2019). Model 3 empirical data show that liquidity, capital sufficiency, asset quality, management soundness, and earning management positively affect NIM. Laeven, Ratnovski, and Tong (2014).

Table 4. 6Random Effect Estimates (Ownership Type)

Local Banks				Foreign Banks			
Variables	Model1 (ROA)	Model2 (ROE)	Model3 (NIM)	Variables	Model1 (ROA)	Model2 (ROE)	Model3 (NIM)
Constant	0.196*** (0.0632)	0.340*** (0.0676)	0.236*** (0.0601)	Constant	0.0254** (0.0091)	0.0116* (0.0065)	0.0682** (0.0325)
CA	0.0190** (0.0077)	0.0301*** (0.0082)	0.0201*** (0.0064)	CA	0.0518** (0.0248)	0.0520** (0.0254)	0.0651*** (0.0240)
AQ	-0.0151** (0.0077)	-0.0295*** (0.0079)	-0.0256*** (0.0063)	AQ	-0.0457** (0.0182)	-0.0358** (0.0180)	-0.0290** (0.0132)
EM	-0.0206 (0.0228)	-0.0556 (0.2205)	-0.0123 (0.0198)	EM	0.0383** (0.0146)	.0235* (0.0138)	0.0271* (0.0155)
MS	-0.0181 (0.2119)	0.0443 (0.0328)	0.0344 (0.1110)	MS	-0.0208** (0.0089)	-0.0532*** (0.0117)	-0.0299** (0.0118)
LIQ	0.267*** (0.062)	0.310*** (0.0296)	0.249*** (0.0627)	LIQ	0.0161*** (0.0047)	0.0540 (0.0441)	0.0724** (0.0269)
OWN	0.0206*** (0.0064)	0.239*** (0.0719)	0.0249*** (0.0073)	OWN	0.0373** (0.0186)	0.0335* (0.0188)	0.0608*** (0.0211)
FA	-0.0254*** (0.0067)	0.0212*** (0.0073)	0.0257*** (0.0069)	FA	0.0131*** (0.0034)	0.0541*** (0.0039)	0.0103** (0.0044)
SIZE	-0.0162 (0.0198)	0.0214** (0.0091)	-0.0715 (0.2104)	SIZE	0.0158*** (0.0048)	0.0201*** (0.0071)	0.0145** (0.0055)

Source: Authors Computation (2022); NB where ROA, ROE, and NIM are the return on equity, return on asset and net income margin, CA is the capital adequacy ratio, AQ is the asset quality MS is the management soundness, LIQ is the liquidity, EM is the earning management, OWN is the ownership type, SIZE is the bank size, and FA is the bank age

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4.5.1 Results

In model 1, the return on assets has a statistically significant positive influence on CAMEL (Capital adequacy and Liquidity). ROA hurts management soundness, earnings management, and asset quality consistency (Ferdinandus, 2020, Nguyen et al., 2022). Model 2 shows that ROE positively affects CAMEL (earnings management, Capital adequacy, and Liquidity). Management soundness and asset quality reduce ROE (Ferdinandus, 2020, and Nguyen et al., 2022). Liquidity, capital adequacy, and earning management have a favorable influence on NIM, according to model 3. Asset quality and management soundness hurt NIM (Aldasoro et al., 2020; Ihsan Hosen, 2021). The foreign banks' ROA, NIM, and ROE have a statistically significant beneficial influence on the CAMEL framework (Capital adequacy, earnings management, and liquidity). However, ROA, ROE, and NIM negatively affect management and asset quality (Adugu, Ibrahim, and Amoah, 2020; Akomeah, Agumeh, and Siaw, 2020; Ferdinandus, 2020, Nguyen et al., 2022).

4.6 Discussion

Using the Trade-off theory and the pecking order theory, we analyzed how the CAMEL framework affected the profitability of commercial banks in Ghana. What's more, the discussions were backed by the relevant literature.

4.6.1 The effect of the CAMEL framework on the profitability of commercial banks in Ghana.

Model 1 shows that return on assets positively affects CAMEL (Capital adequacy, Asset quality, Management soundness, and Earnings management). ROA hurts liquidity, per (Yang and Gan, 2019). The research provides three control variables (firm age, firm size, and ownership type) that positively affect ROA. Model 2 shows that ROE positively affects CAMEL (Capital adequacy,

Asset quality, Management soundness, and earning management). According to, liquidity hurts ROE (Sivalingam and Kengatharan, 2018; Yang and Gan, 2019). Liquidity, capital sufficiency, asset quality, management soundness, and earning management all have a positive influence on NIM, supporting the concept. Kohlscheen, Murcia, and Contreras; Laeven, Ratnovski, and Tong.

The results imply that the commercial banks' capitalization levels and capital bases are both healthy. Their capitalization is enough as per global grading standards. Maintaining or strengthening the CAR would help banks weather any shocks to their balance sheets. Any shocks to their balance sheets caused by the GFC were weathered by the CAR, which remained sufficiently resilient throughout the period. According to Basel II, financial institutions must have an Internal Capital Sufficiency Assessment Process (ICAAP) in place to assess the adequacy of their capital in light of the risks they face (Varaprasad and Rao, 2019). Basel III, on the other hand, seeks to improve the capital framework's risk coverage by, among other things, encouraging more unified approaches to managing market and counterparty credit risk, incentivizing better risk management of counterparty credit exposures, increasing the standards for managing counterparty credit risk by including wrong-way risk, lowering procyclicality, and so on.

In most cases, the ratio of bad loans to total capital and loan reserves causes a financial organization to fail. Profitability is influenced by asset quality via the use of loan reserve provisions. In the event of a deficit, provisions will need to be recorded, cutting into profits via a reduction in interest earned. Interest income is reduced when loans that are past due do not pay interest as planned. As a result, commercial banks need to cut down on their amounts of bad loans and loan reserves (Varaprasad and Rao, 2019; Nguyen, Pham, and Nguyen, 2020). This may be done by removing loan disbursement authority from loan officers who have shown to be incompetent in authorizing

loans, tightening controls on credit officers' portfolios at risk (PAR), or any combination of these measures.

Before extending credit, financial institutions should establish sound policies, put them into practice, regularly review loan portfolios, and set aside enough money to cover any losses. Management has failed miserably in the estimation of the results. It might be difficult to put a dollar amount on management quality, but good managers always keep the three E's in mind: economy, efficiency, and effectiveness. As a result, commercial banks would likely reduce their OER, which might boost their profits. Employee and customer happiness, employee and customer turnover, the number of applications, the number of new consumers, and the number of existing customers who close their accounts are all ways in which management may be evaluated (Nguyen, Pham, and Nguyen, 2020). The data from this question might be used to assess the leadership of a financial institution.

When looking at commercial bank profitability using NIM. There is a significant difference between the commercial banks' profit performance and their CAMEL framework. A bank's retained earnings are the primary driver of internal capital expansion. While commercial banks' liquidity levels show a generally positive appraisal, liquidity management practices are especially noteworthy. For the effective daily and emergency liquidity management and risk control, information must be readily available. Appropriately aggregated data is data that is complete yet brief, relevant but not overwhelming, and readily available when needed. If a bank is reporting regularly, it should be able to keep an eye on its liquidity even in a pinch. Managers should bear in mind the need for crisis monitoring while implementing new management information systems.

4.6.2 The difference in the impact of the CAMEL framework on the profitability of commercial banks in Ghana by ownership.

For a comprehensive analysis of a bank's performance, experts recommend using the CAMEL framework, which takes into account all of these factors: managerial effectiveness; capital strength; earnings capacity; asset quality; and liquidity. Since commercial banks have more liquidity and a better position in the CAMEL components, this study concludes that they are more stable financially than other conventional banks that are not listed (Varaprasad and Rao, 2019; Nguyen, Pham and Nguyen, 2020;Gazi, 2022). When comparing banks based on their ownership structure, private banks are superior to their public counterparts in terms of capitalization, asset quality, managerial effectiveness, and profitability. This demonstrates that private banks invest a larger share of their income towards developing strategies for minimizing expenses. A commercial bank is the most financially stable in the Ghanaian banking sector, As a result, private banks are shown to be more robust than their public sector counterparts in terms of financial health indicators including asset quality, capital strength, earnings potential, and the efficiency of management. Factors such as bank size, bank age, and ownership type, significantly affect banks' financial performance.

Therefore, financial institutions should not just hand out bigger loans without considering the consequences to lower their credit risk. The government and banks should make it easier for private banks to convert to public banks and allow more public banks into the market as public banks continue to perform well. Banks should also prioritise improving their CAMEL score, which measures five different measures of performance. So that public banks may better compete with private banks in the financial market and be driven to improve their financial strength, the government should provide less support for public banks. Banks may now decide which areas of their operations require greater attention by using the methodology given in this study rather than

depending just on financial measures, yielding more accurate results and facilitating better strategic decision-making (Anggono, 2017; Ongore and Kusa, 2013).

CHAPTER FIVE

SUMMARY CONCLUSION AND RECOMMENDATION

5.1 Introduction

The findings and conclusions of the research are summarized in this chapter. The study's findings are summarized, and suggestions are provided. Using the CAMEL paradigm, this study examines the factors that contribute to financial success and presents its results in an executive summary. The summary of the study focuses on the overall overview of the study, which includes short explanations of the study's variables, a description of the research methods, an overall summary of the study, and as well a discussion of the findings.

5.2 Summary of the Study

The research used the CAMEL technique to analyze variables affecting commercial bank profitability in Ghana and bank ownership. It was detailed and explanatory. This investigation targeted Ghanaian commercial banks. This analysis purposefully sampled 9 GSE banks. Annual reports on the firm's website included secondary data. The data came from companies' annual reports (2010-2021). To estimate research parameters, pooled OLS and random effect models were used.

Model 1 shows that return on assets positively affects CAMEL by 1%. (Capital adequacy, Asset quality, Management soundness, and Earnings management). ROA hurts liquidity. The research provides three control variables (firm age, firm size, and ownership type) that positively affect ROA. Model 2 shows that ROE positively affects CAMEL (Capital adequacy, Asset quality,

Management soundness, and earning management). Model 3 empirical data demonstrate that liquidity, capital sufficiency, asset quality, management soundness, and earning management positively affect NIM. Both commercial banks' capitalization levels and capital bases are strong. Their capitalization is adequate according to international grading criteria. Maintaining or enhancing the CAR would assist banks in weathering any balance sheet shocks. The CAR was able to withstand any shocks to its balance sheets generated by the GFC since it remained sufficiently resilient during the period. Financial institutions are required by Basel II to have an Internal Capital Sufficiency Assessment Process (ICAAP) in place to evaluate the adequacy of their capital in light of the risks they face. Basel III, on the other hand, aims to improve the risk coverage of the capital framework by, among other things, encouraging more unified approaches to managing market and counterparty credit risk, incentivizing better risk management of counterparty credit exposures, increasing the standards for managing counterparty credit risk by including wrong-way risk, reducing procyclicality, etc.

5.3 Conclusion

The research used the CAMEL technique to analyze variables affecting commercial bank profitability in Ghana and bank ownership. It was detailed and explanatory. This investigation targeted Ghanaian commercial banks. Experts recommend using the CAMEL framework to evaluate a bank's performance empirically. This approach evaluates management effectiveness, capital strength, earnings capacity, asset quality, and liquidity. This research reveals commercial banks are financially more stable than non-listed conventional banks since they have higher liquidity and a better CAMEL status. Comparing banks depending on their ownership structure, private banks outperform their public counterparts in terms of capitalization, asset quality, managerial efficiency, and profitability. This demonstrates that private banks devote a greater

proportion of their income to the development of cost-cutting techniques. As a result, private banks are more resilient than their public sector counterparts in terms of financial health indices, such as asset quality, capital strength, earnings potential, and managerial efficiency. Significant influences on the financial performance of banks include bank size, bank age, and ownership type.

To reduce their credit risk, financial institutions cannot simply grant larger loans without contemplating the repercussions. The government and banks should make it easier for private banks to convert to public banks and for more public banks to enter the market if public banks continue to perform well. Banks should also prioritise enhancing their CAMEL score, which combines five different performance metrics. For public banks to better compete with private banks in the financial market and to be motivated to increase their financial strength, the government should give less support to public banks. Using the methods outlined in this study, rather than relying just on financial metrics, banks may now determine which parts of their operations deserve more attention, providing more accurate results and allowing for improved strategic decision-making.

5.4 Implication of the Study

This research shows that capital sufficiency positively affects commercial bank performance. Capital sufficiency increases performance. Banks with enough capital can withstand credit, market, and operational losses. Bank management should ensure proper capital levels. Also, regulators should evaluate commercial bank capital requirements. A higher ROE/ROA ratio in financial statements might deceive stakeholders. Asset quality and liquidity boost NIM. Nonperforming loan ratio and loans-to-deposits ratio are proxies for asset quality and liquidity; increasing these ratios increases NIM owing to a drop in total assets. The results show that management efficiency negatively affects ROE while earning ability positively affects it. By

eliminating non-value-added processes and activities, banks can increase their profits by implementing measures to achieve high efficiency. Investors can gain a better understanding of the banks' strengths and weaknesses, allowing them to make more precise and timely investment decisions. In addition, the results suggest to policymakers the major bank performance determinants that should be regulated to ensure a healthy banking system.

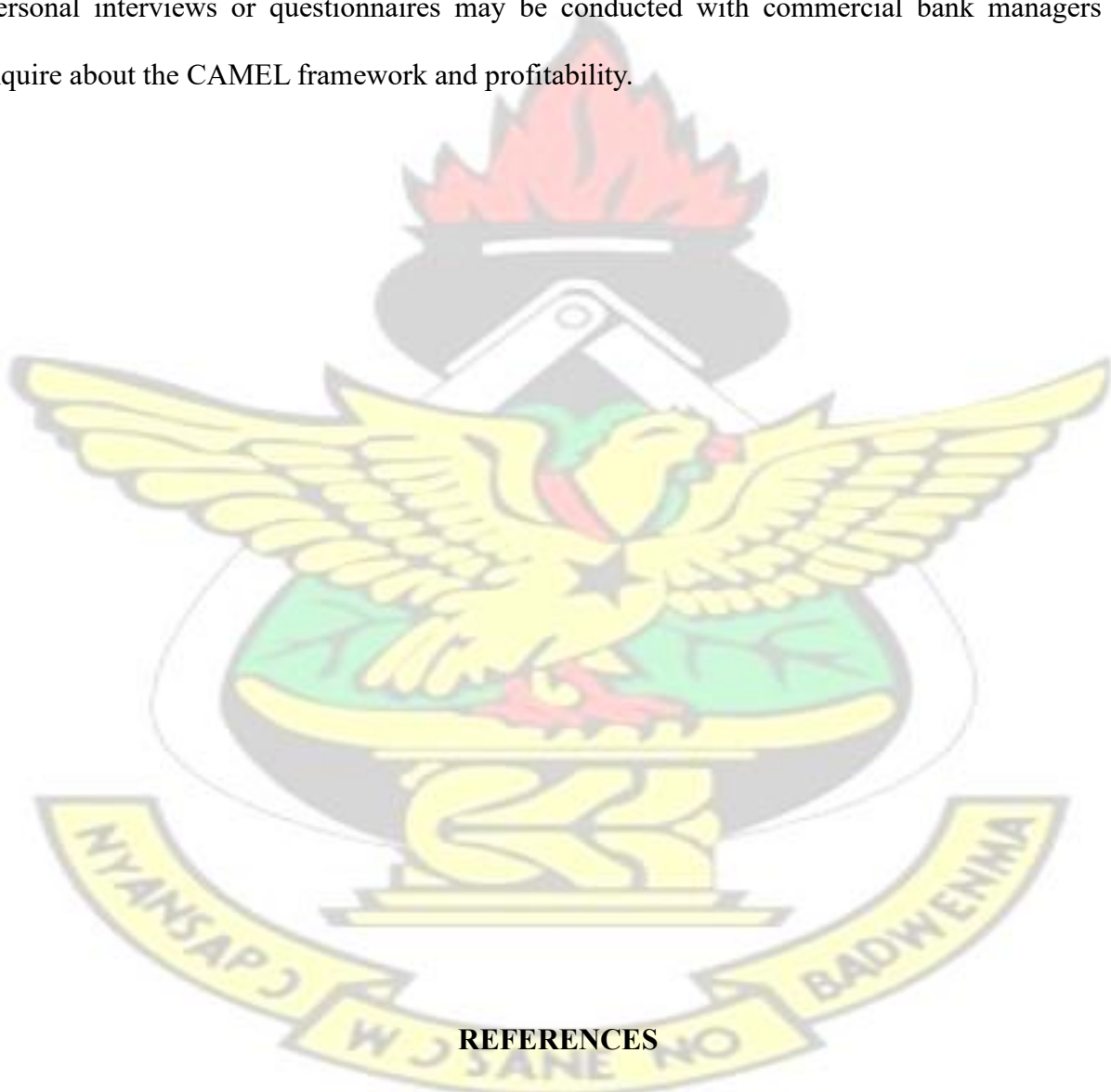
5.5 Recommendation

The report concludes that Ghana's banking sector should emphasize efficiency to remain competitive and robust to economic shocks. Financial institutions should ensure personnel understands CAMEL and its ranking. Banks and regulators should have constant interaction. Ghana commercial banks must increase their credit risk management to avoid the poor performance of loans and advances to boost their profitability. Ghana commercial banks, in particular, should branch out into non-traditional areas and earn money from varied businesses other than core banking activities if they are to boost profitability and sustain expansion.

Banks, especially smaller and medium-sized institutions, need to take the initiative to execute a comprehensive strategy to assure capital growth within the period, analyze bad debts, and determine the degree to which bad debt may be converted into equity to raise their equity. When deciding whether or not to merge with another bank, the interests of the banking system as a whole must be prioritized above those of the individual banks involved. Higher liquidity improves Ghana's commercial banking system, according to regression analysis. As the analysis shows, the improvement in Ghana's commercial banking system is due to the banks' declining liquidity. This strategy aims to improve the efficiency of Ghana's commercial banks by increasing their access to liquid funds.

5.6 Limitations and Future Suggestions

This study offers several benefits, but it also has some limitations. When compared to CAMEL, CAMELS is far better. It would be unable to employ the CAMELS framework because of a lack of information on "S," which indicates sensitivity. Possible inclusion in further research. Future research might use a qualitative method as opposed to the quantitative one utilized in this study. Personal interviews or questionnaires may be conducted with commercial bank managers to inquire about the CAMEL framework and profitability.



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