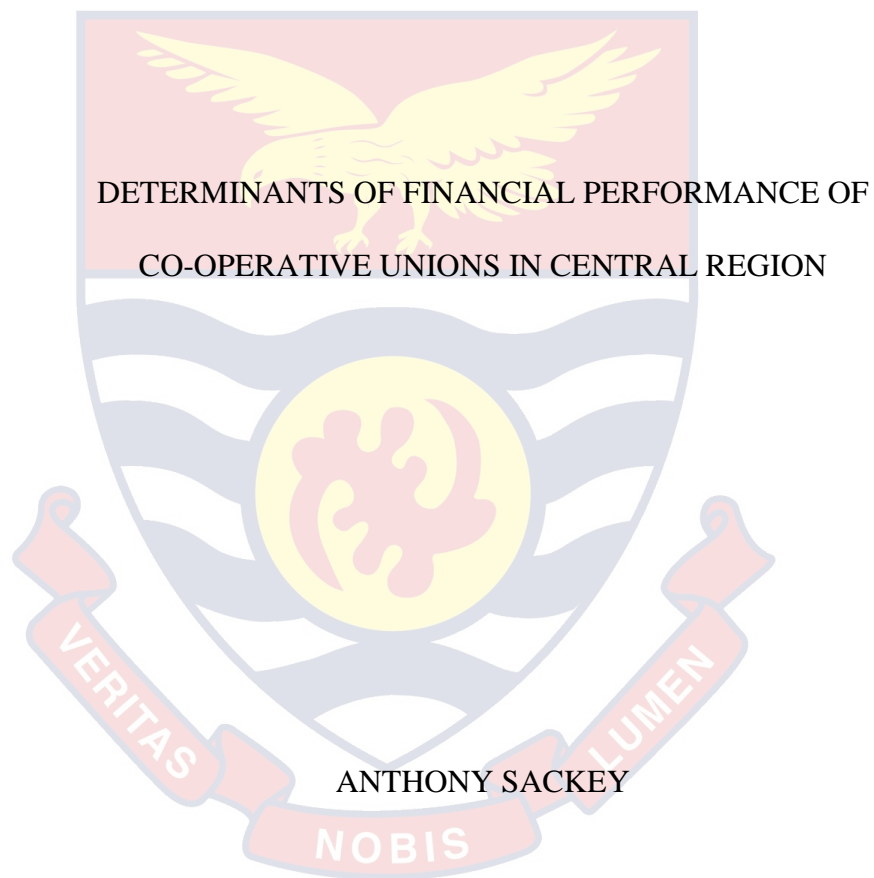
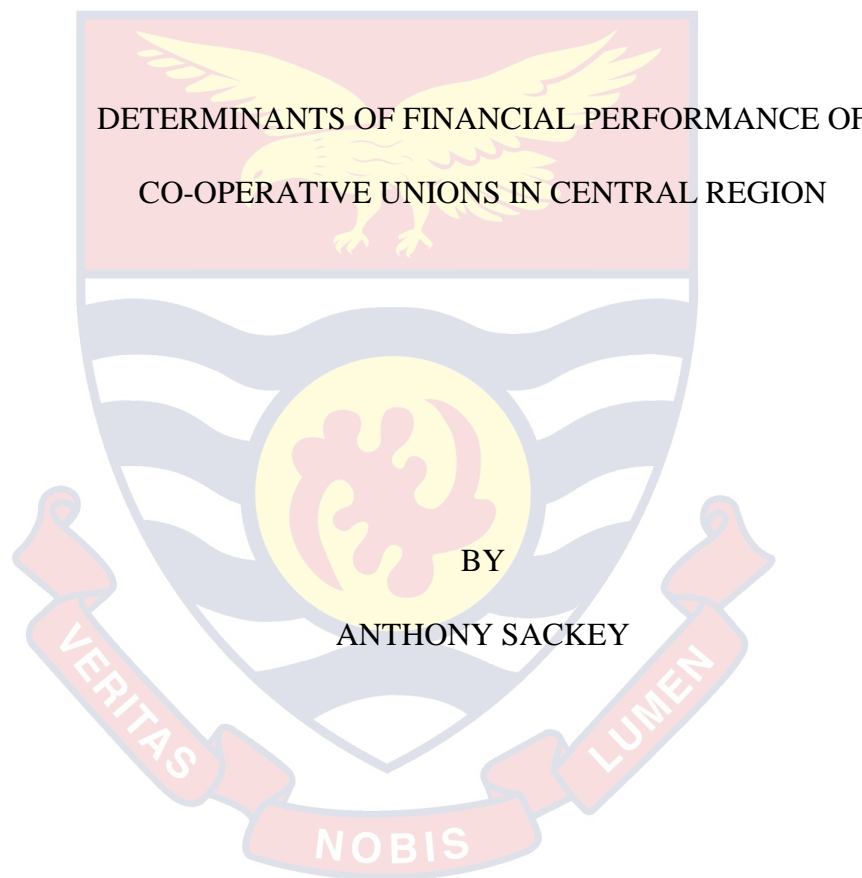


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2021

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This thesis submitted to the Department of Finance of the College of Humanities and Legal Sciences, University of Cape Coast, in partial fulfilment of the requirements for the award of Master of Commerce degree in Finance

OCTOBER 2021

## DECLARATION

### Candidate's Declaration

I hereby declare that this thesis 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 -----

Name: Anthony Sackey

### Supervisors' Declaration

We hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

Principal Supervisor's Signature ----- Date -----

Name: Professor Mohammed Anokye Adam

Co-Supervisor's Signature ----- Date -----

Name: Samuel Kwaku Agyei (PhD)

## ABSTRACT

The performance of financial institutions in Ghana has become very topical in the backdrop of the collapse of many institutions in the financial sector. Among the key institutions that have been folded up in the financial sector of Ghana are those in the banking sector and savings and loans companies. Firms in the Co-operative Credit Union industry, however, seem to have been stable and maintained their survival rate and little is heard about them in terms of the rising level of collapse in the counterpart firms in the banking, savings and loans industries. While Co-operative Credit Unions have been able to maintain their survival rate over the years, there is no sufficient evidence to show that the steady survival rate is due to good performance. In this study, the financial performance of Co-operative Credit Unions was examined in terms of firm size, deposit, business mix and diversification, and operational efficiency based on data covering 2015 to 2019 from 15 selected Credit Unions in the Central Region of Ghana. The CAMEL model was used to measure financial performance. The findings based on the system dynamic generalised methods of moment estimations revealed that the key factors that influence the financial performance of Co-operative Credit Unions include financial performance measures, deposits, business mix and diversification, operational efficiency, and growth in sales. The study found no significant relationship between firm size and financial performance. The study, among other things, recommended that management of Co-operative Credit Unions in the Central Region of Ghana should map up efforts to grow their sales and deposits, ensure proper diversification of assets, and improve the efficiency of their operations to raise the level of financial performance.

## KEYWORDS

Business Mix and Diversification

CAMEL Model

Deposits

Financial Performance

Firm Size

Operational Efficiency



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## DEDICATION

To my Wife



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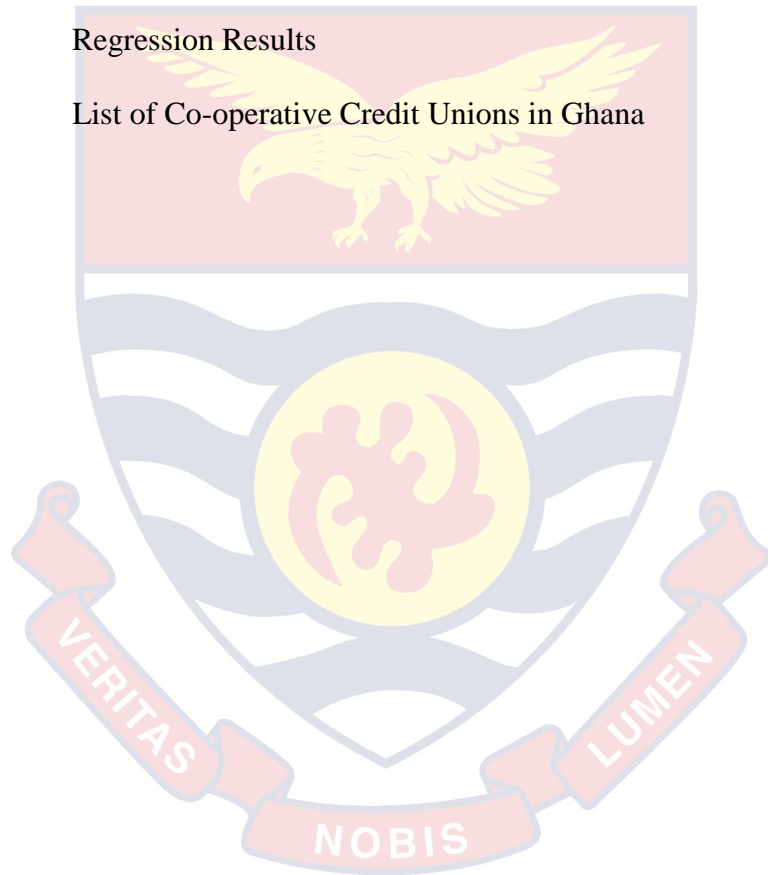


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## LIST OF ACRONYMS

CAMEL	Capital Adequacy, Asset Quality, Management Capability, Efficiency, Liquidity
CCUs	Co-operative Credit Unions
CUA	Credit Unions Association
NBFIs	Non-Bank Financial Institutions



## CHAPTER ONE

### INTRODUCTION

The financial sector of Ghana is made of both bank and non-bank financial institutions providing varied forms of financial services to the members of the economy. Co-operative unions are one key institution of the non-bank financial institutions that are mainly set up to receive deposits and grant loans to their members, engaging in investment activities, and paying dividends to its members. The credit unions in Ghana are steadily increasing but for members to have full benefits of these institutions, they must position themselves to compete effectively in the financial sector to generate higher financial performance. This means that credit unions in Ghana must consistently review the factors that work to affect their financial performance.

#### **Background to the Study**

The financial sector, how it operates, and its development partly determines the rate of economic development of every nation (Mantey, 2016). Financial institutions, both bank and non-bank have major roles to play which contributes to the world economy. Co-operative unions are non-bank financial institutions that provide financial services to serve the interest of their members. According to Mohammed (2015), co-operative unions are seen all over the world and presently, credit unions are found in more than 90 countries with an estimated membership of more than 700 million. Considering the unique activities of credit unions to their members and their contribution to the economies of the world, Njeri (2016) has described them as one of the most powerful economic institutions in the world.

From the perspective of developing economies, credit unions have gained important recognition and have thrived progressively well (Akenten, Odonkor & Andoh, 2019). The development and the widespread of credit unions in developing economies, especially in the West African sub-region, are attributed to the underdevelopment of the formal financial sector and the considerable degree of financial exclusion of sections of the population who have limited financial resources (Njeri, 2016). Credit unions mobilise members of specific vocations and communities by using a focused approach and intending to serve the financial needs of members.

Largely, credit unions have the objective of positively affecting the growth of their communities and members through offering financial support. Credit unions also undertake investment activities after taking deposits from members and granting credit to members (Ongore, 2013). They also aim at building the impenetrable social capital of their members and the smaller communities in which they operate (Mohammed, 2015). Credit unions, though are financial institutions and accept deposits, cannot be classified as banks due to the defined objective of serving the interest of members and providing financial services to individuals who are excluded from the formal financial sector (Singh, 2006).

It has been argued that credit unions in many countries are companies limited by guarantee and as a result are tax-exempt. Furthermore, managers of credit unions do not receive bonuses that are tied to shareholder value; and they are not permitted to engage in risky investment practices that will diminish short-term returns (Asare, 2015). Credit unions are however

managed by individuals who know financial services, investment activities, and risk management (Asare, 2015).

In Ghana, co-operative unions are regulated by the Ghana Co-operative Union Association, which is placed under the supervision of the Bank of Ghana. In principle, credit unions in Ghana have been subjected to the supervision of the Bank of Ghana since the introduction of the Non-Bank Financial Institutions Act in 1993. It must be however noted that the Bank of Ghana only exercises regulatory forbearance; supervision is presently left in the hands of the Ghana Co-operative Union Association (World Bank, 2015). According to CUA (2017), credit unions in Ghana have achieved many successes including credit management, service delivery, savings mobilisation and product development. The number of credit unions in Ghana as of 2019 stands at 527 with more than 550 members who contribute capital for the administration of the unions (CUA, 2019).

The financial performance of co-operative unions is instrumental in sustaining the interest of members. The performance matrix of co-operative unions in Ghana, as revealed by the World Bank (2016) revealed the following. Credit unions in Ghana have a higher spread compared to banks in Ghana; credit unions lending rates are lower than that of commercial banks in Ghana; credit unions on the average offer affordable lending products to members that would otherwise have limited access to finance from commercial banks (World Bank, 2016). However, the cost of funding for credit unions is higher than that of banks in Ghana and even though the spread of credit unions is higher than that of banks, their spread has been decreasing from 20% in 2010 to 18% in 2014 (World Bank, 2016).



It has been further identified that large operating cost of credit unions in Ghana mainly influence the spread in these institutions with overhead cost being the largest contributor of interest rate spread and profit margin being the second largest (Credit Union Association [CUA], 2017). It is further revealed that the efficiency indicators of credit unions in Ghana are deteriorating. The overall financial performance of credit unions in Ghana is, however, affected by the increasing competition in the formal and informal financial sector (Asare, 2015). To this extent, the Bank of Ghana (2018) has recommended credit unions to beef up their strategies for increasing their asset base, increase their capacity of deposit mobilisation, boost their operating efficiency and diversify their business mix.

It has, therefore, become imperative for co-operative unions to investigate the key financial performance indicators and design business strategy to boost their capacity to compete effectively. Based on the literature, this study measures the financial performance of credit unions by using earnings variables from the CAMEL (capital adequacy, asset quality, management capability, earnings strength, liquidity and sensitivity to market risk) framework (Ali & Bojan, 2018). The study investigates the determinants of financial performance of co-operative unions by focusing on firm-specific variables such as firm size, deposit, business mix and diversification, and operating efficiency.

### **Statement of the Problem**

Financial performance is the main focus of firms running with a profit motive, and this is so because the vibrancy of firms depends on their financial



strengths. With regard to co-operative unions in Ghana, several factors have been cited as influencing their financial performance and these include industry and economy-wide factors such as market structure, industry concentration, cyclical output and inflation (Asare, 2015; Mohammed, 2015). Furthermore, the CUA (2015) has cited the problems of credit unions in Ghana to include high loan delinquency rate and higher withdrawals by members which have affected the operating efficiency and other financial indicators of credit unions.

Consequently, Mwinyorbu (2018) has cautioned credit unions in Ghana to the effect that the massive collapse of banks in Ghana could visit the credit unions industry. According to Mwinyorbu (2019), there is evidence of liquidity mismatch as deposits received for the short term are granted as medium-to-long-term loans. Furthermore, credit unions engage in risky diversification (into real estate and mortgage loans) which they do not have the required system and competency to manage (Sarfo, 2018).

Even though some studies (Asare, 2015; Mohammed, 2015; Mwinyorbu, 2018; Sarfo, 2018) have targeted the assessment of the financial performance of credit unions in Ghana, there is a gap in terms of the firm-specific factors that determine the financial performance of credit unions. The prospects and challenges of credit unions in Ghana have been investigated in relation to performance (Mohammed, 2015); the evaluation of credit unions financial performance has also been assessed (Asare, 2015). Sey (2017) has further assessed the credit risk management of credit unions concerning performance, and Mantey (2016) investigated the determinants of loan delinquency among credit unions in Ghana.

Furthermore, evidence on determinants of financial performance of financial institutions such as banks abound. There is, however, limited evidence on the factors that influence financial performance of credit unions in the context of Ghana. Since the business structure of banks and credit unions significantly differ, it would be inappropriate to extend the evidence from the banking sector to the credit union industry. There is, therefore, the need to investigate the firm-specific factors that affect the financial performance of cooperative unions in Ghana to provide a comprehensive roadmap to guide the financial concept of these institutions. In summary, this study focused on assessing the variables that determine the financial performance of credit unions in the Central Region of Ghana. The Central region was selected because the region is considered as one of the few regions in Ghana with low penetration of financial institutions. Hence, focusing on this region is important for credit unions in the region to enable them identify the factors that influence their financial performance for the purposes of strategic decision making.

### **Purpose of the Study**

The purpose of this study is to investigate the firm-specific factors that affect the financial performance of credit unions in the Central Region of Ghana.

### **Research Objectives**

The study sought to achieve the following objectives: to

1. Examine the relationship between firm size and financial performance of credit unions in the Central Region of Ghana
2. Assess the relationship between deposit and financial performance of credit unions in the Central Region of Ghana
3. Test the relationship between business mix and diversification and financial performance of credit unions in the Central Region of Ghana
4. Examine the relationship between operational efficiency and financial performance of credit unions in the Central Region of Ghana

### **Research Hypotheses**

The following hypotheses were set for the objectives of the study:

**H1<sub>0</sub>:** There is no significant relationship between firm size and financial performance

**H2<sub>0</sub>:** There is no significant relationship between deposit of credit unions and their financial performance

**H3<sub>0</sub>:** There is no significant relationship between business mix and diversification and financial performance

**H4<sub>0</sub>:** There is no significant relationship between operational efficiency and financial performance

### **Significance of the Study**

This study would “be beneficial to Credit Union managers as it would help them better understand the determining factors of their financial performance and thus be able to focus on improving these factors to ensure that their financial performance keeps improving.” “This study would also

guide policy makers to come up with favourable policies which could spur growth and profitability in this sector.” “Researchers and academicians in the field of finance, economics and the financial sector at large would find this study a useful guide for carrying out further studies in the area.” Credit union members would also benefit from the study since it would give them adequate information on what to do to sustain their various credit unions and what to inquire from management during annual general meetings on the sustainability of their unions.

### **Delimitation**

This study focused on evaluating the determinants of the financial performance of credit unions in the Central Region of Ghana concerning firm-specific factors namely firm size, deposit, business mix and diversification, and operating efficiency. The study assessed the factors within five years, from 2015 to 2019 which the study considered enough to elicit the trends in financial performance and its determinants to aid in making informed decisions. The study used secondary data available in the financial performance and the firm-specific determinants of credit unions for analysis. Variables on financial performance used in this study are “capital adequacy, asset quality, management capability, earnings, and liquidity” (Ali & Bojan, 2018).

### **Limitations of the Study**

The study could not ascertain data on all the 36 credit unions in the Central Region of Ghana and hence, the results of this study were reflective of

only 15 out of the 36 credit unions. Furthermore, the study results were a composite of all the different types of credit unions without recourse to examining the specific situation for workplace, community and parish co-operative credit unions. The limited scope of the study therefore limited the larger generalisation of the results.

### **Organisation of the Study**

This thesis is arranged in five chapters. Chapter one was the introduction, which dealt with details on the topic, statement of the problem, research objectives, as well as implication of the study. It also presented questions that the study sought to answer as well as the delimitation and limitations of the research. The second chapter entailed reassessment of the significant written materials or works on the study. Chapter Three dealt with the research methods. This section outlined in detail the research methodology. It comprised the analysis method, data origin, target group, sample size, sampling technique, data compilation tools and its associated procedures. In Chapter Four, the results are analysed and the findings were reported following the purpose of the study. Chapter Five focused on the discussion, conclusions, and recommendations centred on the study.

## CHAPTER TWO

### LITERATURE REVIEW

#### Introduction

This chapter deals with the review of literature about the determinants of financial performance of credit unions in the Central Region of Ghana by first of all considering the theoretical underpinnings of the study. This chapter further looked at the conceptual review which discussed the history of credit unions in Ghana and their roles in the financial sector and the economy of Ghana. The empirical review in respect to the relationship between the variables outlined in the objectives was also presented in addition to the conceptual framework that put the entire study into the correct perspective.

#### Theoretical Review

The Arbitrage Pricing Theory served as the main theoretical foundation for the study.

#### The Arbitrage Pricing Theory

Advanced by Ross in 1976, the main tenet of the arbitrage pricing theory holds that the returns from financial assets or business entity are a linear function of several factors that operate in the market and the firm and that change in those factors affect the returns of the asset or entity (Ross, 1976). The degree to which each factor affects the returns of the asset or entity is measured by the beta of each factor. The arbitrage pricing theory has been applied in different areas of finance such as for assessing the cost of capital (Elton, Gruber, & Mei, 1994) and for measuring specific and market risk factors that affect the profitability of firms (Bower & Schink, 1994).



According to Huberman and Wang (2005), the arbitrage pricing theory can be adopted as the basis for assessing the institutional and market factors that affect the returns of a business entity. In this respect, the business entity is viewed as a portfolio that functions to deliver certain ‘returns’ to its investors through the production of desirable profits. According to Oyetayo and Olufemi (2017), the arbitrage pricing theory has also been used to examine the relationship between economic performance and the factors that influence it.

Based on the different ways of the application of the arbitrage pricing theory, this present study adopted it to examine the factors that influence the financial performance of credit unions in the Central Region of Ghana. The linkage between the arbitrage pricing theory and the purpose of this study is that the study conceptualised credit unions to constitute an asset that operates to deliver optimum returns to their investors. In this respect, certain factors intuitively affect the returns which credit unions could report. The returns of credit unions were conceptualised as their financial performance which was measured in terms of the CAMEL model: capital adequacy, asset quality, management capability, earnings strength, liquidity, and sensitivity to market risk framework (Ali & Bojan, 2018).

The institutional factors that affect the returns (financial performance) of credit unions were also conceptualised to reflect the firm size, business mix and diversification, operational efficiency and deposit stance of credit unions. Hence, this study based on the arbitrage pricing theory to establish the linkage between the institutional factors that affect the financial performance of credit unions in the Central Region of Ghana. The main strength which backed the employment of the arbitrage pricing theory was that the theory has fewer

restrictions regarding the type of information that are allowed to become part of the model. This means that any information, whether qualitative or quantitative that has the propensity to affect the returns or financial performance of the entity can be captured in the model. It allows for more factors to be captured in the model to the extent that they are considered relevant in affecting the dependent variable. These specific factors were: firm size, deposit, business mix and diversification, and operational efficiency.

### **Meaning of Co-operative Union**

Co-operative union has been variously defined by different researchers and according to Turner (2000) credit union had been defined in terms of a financial self-support association by which members come together to save and mobilise money which is used as the bases for providing financial support through soft loan schemes to its members. The definition was further extended to include the fact that credit unions are established based on strong connection or common bond among members and for which established unions operate within locations that are visible to community members. From the definition of Turner (2000), it can be inferred that members that form credit unions find themselves within the same community and share common aspirations, beliefs and life goals.

In the view of Darko (2007), credit unions are defined in terms of the functions they perform and these functions have to do with primarily serving the financial needs of the members of the credit union. According to Darko, the prime motive of credit unions is not to amass wealth through abnormal profits but to assist in developing the members towards the attainment of their



objectives. From this definition, credit unions will achieve the economic and social needs of their members if they are to work on sound financial principles and prudential values while adopting best practices to remain relevant for their members.

### **Overview of Co-operative Credit Unions in Ghana**

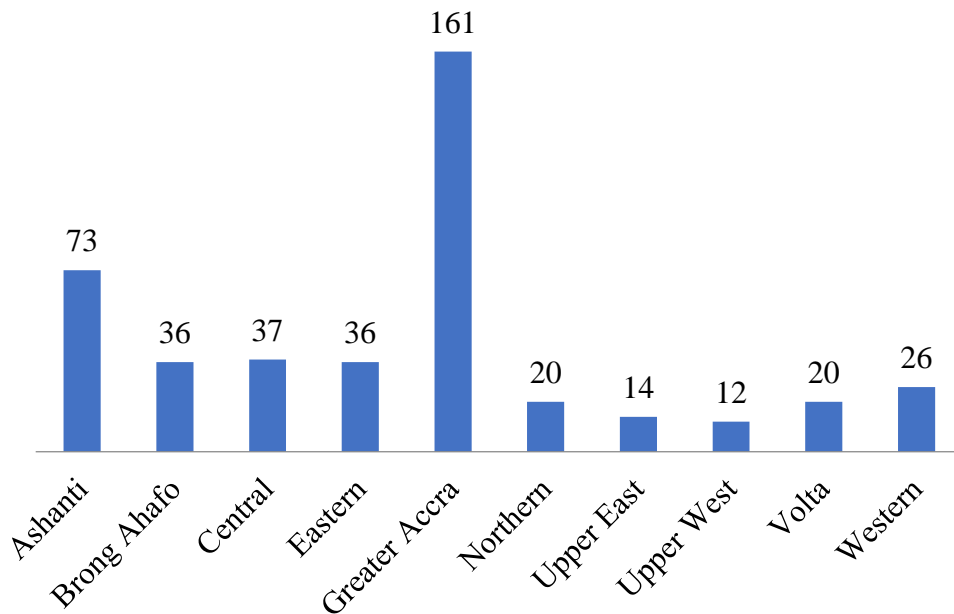
The history of credit unions in Ghana is traced to as far back as 1955 when the credit union in the African region was given birth to in the then North-West (Upper West Region) part of Ghana. The motivation for the formation of the first credit union in Ghana was espoused by an Irish Canadian Missionary by the name of Rev. Father John McNulty (Ahorlu, 2009). By the year 1960, the missionaries in the country had encouraged the formation of credit unions in the various Parishes of the missionary societies in the country. With the encouragement of the first President of the Republic of Ghana, credit unions grew across the length and breadth of the country with membership in credit unions considered as a privilege and honour (Sarfo, 2018). From the time of the conception of the idea of credit unions to the modern-day, the concept of credit unions brings people of common interest together to mobilise funds to cater for the needs of the members of the unions.

In the contemporary time in Ghana, members of credit unions benefit from financial assistance with a minimal interest rate from credit unions after being a contributor for up to six months. Members of credit unions also receive their share of profits after the management of the unions has declared profit for a particular year (Sarfo, 2018). According to the Credit Unions Association (CUA) of Ghana (2020), credit unions have obligations to

perform and chief among these obligations include the fact that they buy shares at a value of GHS500 from the Credit Union Association. Belonging to credit unions also comes with the obligation of paying dues to both the credit unions association and credit union firms. Furthermore, credit unions are expected to deposit 5% of their total assets with the credit union association of Ghana while they participate in credit management programmes as well as all training programmes.

The Credit Union Association (2014) had reported that there were 435 registered credit unions with membership at 490,167, with a total accumulated and mobilised total asset of GHS565.4 million, mobilised deposit of GH476 million and granted loans in the sum of GHS290 million. Credit unions in Ghana also have a liquidity level of GHS167.4 million and an employee base of 2,384. Moreover, the account of each credit union is subject to auditing by the credit unions association for every financial year; and an annual general meeting is also convened to give accounts of management stewardship to the members of the credit unions. These obligations to credit unions and their members have contributed to the strengthening and sustainability of the credit unions movement in Ghana.

Co-operative unions in Ghana also operate as part of the financial system of the economy and for that matter, their operations are regulated by rules set by the Bank of Ghana. In terms of numbers, co-operative unions have grown in number with a total of 435 credit unions in Ghana as of the year 2020 (Credit Union Association, 2020). Figure 1, provides the regional distribution of credit unions in Ghana.



*Figure 1: Regional Distribution of Credit Unions in Ghana*  
 Source: Credit Unions Association (CUA) of Ghana (2020)

Figure 1 reveals that the Greater Accra region of Ghana leads, in terms of the highest number of credit unions, with a total number of 161, and followed by the Ashanti Region with the second-highest number, 73 credit unions. The Central Region follows as the third-highest, accounting for 37 credit unions. Eastern and Brong Ahafo regions have an equal number (36) of credit unions. Western Region follows with 26 credit unions; Northern and Volta Regions are next with 20 credit unions, and the last two regions with the least numbers are Upper East Region with 14 credit unions and Upper West Region with only 12 credit unions.

### **Co-operative Union Operations in Ghana**

Co-operative unions and their operations in Ghana are regulated by the Non-Bank Financial Institutions Act, 2008 (Act 774) and the Co-operative Union Regulations, 2015 (L.I. 2225). According to the Bank of Ghana (2017), credit unions are established to engage in activities of financial nature

including providing credit facilities to their members and accepting deposits from their members. All credit unions are formed and registered under the Co-operative Societies Act 1968 (N.L.C.D 252) with a license provided by the Bank of Ghana. Some of the key regulatory requirements are in respect of business form, capital, shareholding, membership, branches and agencies, and amalgamation and transfer of society among others. For example, the minimum share capital of members of credit unions in Ghana is not less than GHS100 and no member of credit unions is permitted to hold more than 20% of the shares of a particular credit union. Furthermore, the minimum number of members that a credit union could have at any point in time is 150 with the maximum membership limited to 600 (Bank of Ghana, 2018).

In terms of the business operation of co-operative unions, they are at liberty to engage in a range of services such as deposit-taking, granting of loans, investment, creating reserve fund, borrowing, and declaring dividends. Concerning the taking of deposits, credit unions are not permitted to take a single deposit of more than 10% of the total deposits available and prior written approval to the Bank of Ghana is required before the limited can be exceeded. Again, credit unions are required to grant loans to only registered members of that union and loans granted are not to exceed 10% of the total capital of the union (Sarfo, 2018).

Furthermore, the investment operations of co-operative unions may be part of their deposit-taking functions, investment in shares, bank deposits and treasury bills. According to the Bank of Ghana (2017), the total investment fund of credit unions must not exceed 1% of their total assets, and the motive for this restriction and to preserve the liquidity needs of the credit unions and

their members. On the front of maintenance of reserve funds, credit unions are required by law to maintaining 25% of their annual profits in the reserve funds. On the other hand, credit unions are limited in terms of the funds they can borrow. For example, they are not permitted to borrow beyond 40% of their total assets and in terms of dividend; credit unions cannot pay more than 50% of the annual profit generated as a dividend without having recourse to the Credit Unions Association of Ghana.

### **The Concept of Financial Performance**

Financial performance is assessed in terms of a firm's ability to achieve its financial objectives (Fatihudin & Mochklas, 2018). Several indicators are widely used in literature in assessing the financial performance of financial institutions (credit unions) and these variables include the "capital adequacy ratio, solvency, liquidity, efficiency, leverage and profitability." Financial performance is also defined in terms of a firm's ability to efficiently manage and control its resources to produce the desired monetary returns which are contained in reports such as the cash flow statement, profit and loss accounts, statement of changes in equity, and balance sheet. Crane (2016) proposed some key measures of financial performance of firms and these are discussed in brief.

Liquidity is defined as the firm's ability to meet its financial obligations in the short term without causing distraction in the normal flow of business operations. According to Ali and Bilal (2018) who distinguished between operational and structural liquidity, operational liquidity is defined in terms of the firm's cash flows while structural liquidity is assessed in terms of

the link between a firm's assets and liabilities. Liquidity challenges usually emanate from the firm's inability to translate its non-cash assets into liquid cash (Tailab, 2014). The two major indicators of liquidity of firms include current ratio and working capital. Both measures of liquidity emphasise the need for firms to hold liquid or cash resources to meet the financial obligations of the firm.

Profitability is another major variable that defines the financial performance of a firm. Profitability measures the degree to which a business can generate profit from its business operations. Crane (2016) reported that the profitability of firms has a direct relationship with the degree of deployment of capital, management quality and labour through the assessment of the relationship between expenses and revenue of firms. The indicators that are used to measure the profitability of firms include the returns on equity (ROE) which measures the degree of returns to equity holders, returns on assets (ROA) which provides insights regarding how well a firm uses its assets to generate profit, and net operating profit (NOP) which emphasises how firms generate short term profitability. Furthermore, Ali and Bojan (2018) in their study discussed the variables that are used as a proxy to assess financial performance to include "capital adequacy, asset quality, management capability, earnings strength, and liquidity."

### **Factors that influence Financial Performance**

The financial performance of firms is considered a very important concept because the survival and the competitiveness of any firm are dependent on the ability of the firm to attain sound monetary returns on its



business operations (Ali & Bilal, 2018). In the study of Ali and Bilal which focused on the determinants of financial performance of firms in Jordan, it was found that leverage, firm size, liquidity, revenue and profitability were significant factors that affect the firms' financial performance, which was measured as the return on assets (ROA). While the study of Ali and Bilal (2018) found leverage and firm size to have a negative influence on the financial performance of firms, other variables such as liquidity, profitability and revenue produced a positive effect on firms' financial performance.

Furthermore, Yesmine and Bhuiyah (2015) in their study measured the financial performance of financial institutions in terms of returns on assets. The results of their study revealed that operational efficiency, asset utilisation, liquidity, credit risk, capital adequacy, and firm size determine the financial performance of firms with the emphasis that credit risk and liquidity offer negative influence while operational efficiency, asset utilisation, capital adequacy and firms size offered positive influence. Nadia (2016) also conducted a study on the strategies used by credit unions in Grenada to increase their profitability. The study lent support to the evidence already reported in the sense that Nadia (2016) reported a strong relationship between credit unions' profitability and credit risk management, operational efficiency, advertising and promotion and portfolio growth and development.

According to Bojan and Ali (2018), financial institutions (both bank and non-bank) have similar factors that affect their financial performance. Based on this argument, Bojan and Ali (2018), based on the result of their investigation reported that the "capital adequacy ratio, asset quality, managerial quality, and liquidity" were significant factors that influence

financial performance. The study further revealed that bank “size, deposits, business mix and diversification and operating efficiency” were also important determinants of the financial performance of firms. The results from prior literature have revealed that the measurement of financial performance and the factors that determine it can sometimes be interwoven. For example, Bojan and Ali (2018) used liquidity as an important factor that influence financial performance.

Meanwhile, the study of Tailab (2014) and Crane (2016) all used liquidity as a measure of financial performance. This distinction in the use of the same variable(s) as a dependent variable at one time and as an independent variable at another time is not out of place since quantitative variables in business could have a bi-causal relationship (Lee & Kim, 2013). In this present study, financial performance was measured according to the measurement of Ali and Bojan (2018) which captured asset quality, earnings strength, capital adequacy, liquidity, sensitivity to market risk as the indicators, and management capability. The bank-specific variables that have been examined in this study as influencing the financial performance of credit unions included bank size, deposit, business mix and diversification, and operational efficiency.

### **Empirical Review**

This study reviewed empirical reports on the relationship between the variables that financial performance and each of the determinants as captured in the objectives of the study.



## Firm Size and Financial Performance

The study of Roger, Ali and Bojan (2018) investigated the “determinants of financial performance of credit unions in Central and Eastern Europe by constructing a financial performance index based on the CAMEL ratios (Capital adequacy ratio [C], asset quality [A], management capability [M], earnings [E], and liquidity [L]).” Roger, Ali and Bojan (2018) defined firm size as a tool for enhancing the competitiveness of credit unions and measured it by the natural logarithm of total assets. This way of measuring firm size was affirmed in other similar studies such as Dietrich and Wanzenried (2014) and Athanasoglou, Brissimis and Delis (2008). The results of the study of Roger, Ali and Bojan (2018) revealed that the size of credit unions has a significant negative influence on the “financial performance of credit unions”.

Furthermore, Yesmine and Bhuiyah (2015) performed a comparative investigation on the determinants of the financial performance of nationalised and local private commercial banks in Bangladesh by measuring financial performance based on bank profitability and collecting data from 2008 to 2014 on 10 local banks and all the national banks. Firm size was measured by the logarithm of total assets as it was in the study of Roger, Ali and Bojan (2018). The regression results from the study of Yesmine and Bhuiyah (2015) concluded that firm size and financial performance has no significant relationship. This result did not agree with the results reached in the studies of Roger, Ali and Bojan (2018) and Pasiouras and Kosmidou (2007) who instead found a significant relationship. In these studies, they posed arguments that firm size affects financial performance in that larger firms can enjoy

economies of scale and offer financial services at a lower cost which allows them to have a competitive advantage. Another argument was that extremely large firms could suffer from agency cost which can negatively affect their financial performance.

Moreover, the study of Ongore (2013) examined the “determinants of the financial performance of commercial banks in Kenya” by using linear multiple regression. The conclusion that was drawn from this study was that firm size, measured in terms of capital size, size of the credit portfolio, and the size of deposits were significantly influenced the financial performance of commercial banks in the financial sector. Based on the empirical reviews regarding the relationship between firm size and financial performance, this present study measured firm size as the logarithm of the total assets. Furthermore, this study found from the reviewed literature that firm size can have a negative or positive relationship with financial performance. It was therefore expected that the size of credit unions has a negative or positive significant relationship with their financial performance.

### **Deposit and Financial Performance**

Deposit received by deposit-taking institutions is regarded as one of the important tools for financial institutions to perform financially. The study of Tuyishime, Memba and Mbera (2015) examined the effect of deposit mobilisation on the financial performance of commercial banks in Rwanda by surveying 27 branch managers of equity banks in Rwanda. The results of the study revealed that the ability of financial institutions to increase the size of the deposit directly affects the quantum of loans they could grant.

Consequently, high volumes of deposits raise interest income which directly increases the profit margin, returns on equity and returns on assets.

Ramji (2018) has however argued that increased deposits can have a negative influence on the financial performance of firms in the event of high non-performing loans. Ramji (2018) further argued that deposit-taking institutions need to grant loans from deposits to make profits. Non-performing loans are also directly connected to the granting of loans. Therefore, it is only deposit-taking institutions that can control the level of loan loss that can increase their financial performance through an increase in the interest margin. This argument suggests that an increase in deposits can have either a negative or positive effect on the financial performance of deposit-taking institutions.

The study of Ali and Bojan (2018) measured total deposit as the ratio of total deposit to total assets and this means of measuring deposits has been endorsed in the studies of Lee and Hsieh (2013) and Menicucci and Paolucci (2016). It has been argued that a larger deposit to total assets ratio tends to increase the profitability of institutions that accept deposits through the increase in interest margin. From this line of argument, one would expect an increase in deposit to have a significant positive impact on financial performance. On the contrary, Dietrich and Wanzenried (2014) were of the view that the ability of deposits to produce higher profitability depends on the firm's ability to translate the deposit liability into assets and earning reasonable returns.

It was further submitted that deposit-taking institutions with many branches are more likely to have increased financial performance than those with fewer branches. This presumed that the relationship between deposit and

financial performance of firms is moderated by the size of the firm (in terms of the number of branches). In terms of measuring deposit for statistical purposes, other researchers such as Sufian (2012) and Sufian and Noor (2012) proxied deposit as the logarithm of total deposits.

In Ghana, the study of Boadu (2015) on the assessment of the efficiency and productivity of co-operative unions in the Greater Accra region of Ghana revealed that deposit of credit unions had a strong relationship with productivity indicators such as the growth in investment. The study of Boadu (2015) further revealed that deposit, measured in terms of the savings of the members of credit unions positively affects the efficiency and productivity of credit unions in the Greater Accra Region of Ghana. The deduction that was made from the empirical review between the relationship between deposit and financial performance is that deposit positively affects financial performance, all other things held constant.

### **Business Mix and Diversification and Financial Performance**

Business diversification is seen as one important strategy that spurs the financial performance of firms. According to Stiroh (2000), the main purpose of a firm diversifying its business is to reduce the level of systemic risk inherent in the operations of the venture. According to Goddard, Molyneux and Wilson (2004), many banks and non-bank financial institutions diversify their business portfolio as a strategy to remain competitive and profitable. The study of Boadu (2015) reported that co-operative unions in Ghana have limited opportunity to diversify their operations due to regulatory requirement. But notwithstanding the limitation imposed on them by the legal system, co-

operative unions in Ghana practice some level of business mix and diversification in the light of engaging in multiple transactions such as creating assets through the granting of loans and investing in short term government securities.

According to Petria, Capraru and Ihnatov (2015), whose study focused on examining the determinants of bank profitability, they measured business mix and diversification by the ratio of operating income to average total assets while financial performance was measured in terms of net interest margin, return on assets and return on equity. The result of the study of Petria, Capraru and Ihnatov (2015) revealed that the business mix and diversification of financial institutions have a significant positive effect on their profitability. The study of Capraru and Ihnatov (2014) found no evidence regarding the relationship between business mix and diversification and financial performance of firms.

The study of Juan and Manuel (2004) posed a strong argument that the effect of business mix, diversification and financial performance of firms differ from one to another. They argued that not all diversification is beneficial and successful diversification depends on the diversification strategy and the environment within which a business diversifies its portfolio. In the end, their study revealed that the relationship between business mix, diversification and financial performance of firms is impacted by the number of experts that drive the diversification strategy in a generally volatile economic environment. This study, therefore, expected a positive relationship between business mix, diversification and financial performance.

## Operational Efficiency and Financial Performance

In the assessment of the variables that influence the financial performance of co-operative unions, this study empirically examined prior studies in the financial sector. One of the major variables that were found to influence the financial performance of both banks and non-bank financial institutions included the operational efficiency of financial institutions (Rashid & Jabeen, 2016). In terms of its measurement, Rashid and Jabeen (2016) reported that it is not unconventional to measure the operational efficiency of financial institutions by using the ratio of operating expenses to interest income.

The interpretation is that if the ratio is smaller, the firm is operating efficiently, against a higher ratio which represents operational inefficiency. The study of Rashid and Jabeen (2016) expected a negative relationship between operational efficiency and financial performance, but the result from the data analysed revealed that there was no significant effect of operational efficiency on financial performance. The insignificant effect was attributed to the fact that the operational expenses of the selected financial institutions were small comparative to the interest income; and for which they believed could not significantly cause changes in the financial performance of the selected financial institutions.

The study of Ali and Bojan (2018) have added to the argument by revealing that financial institutions that incur higher operating efficiency tend to increase their financial performance in terms of higher liquidity and higher capital adequacy. The conclusion reached in the study of Ali and Bojan (2018) differs from the conclusion obtained in the study of Rashid and Jabeen (2016)



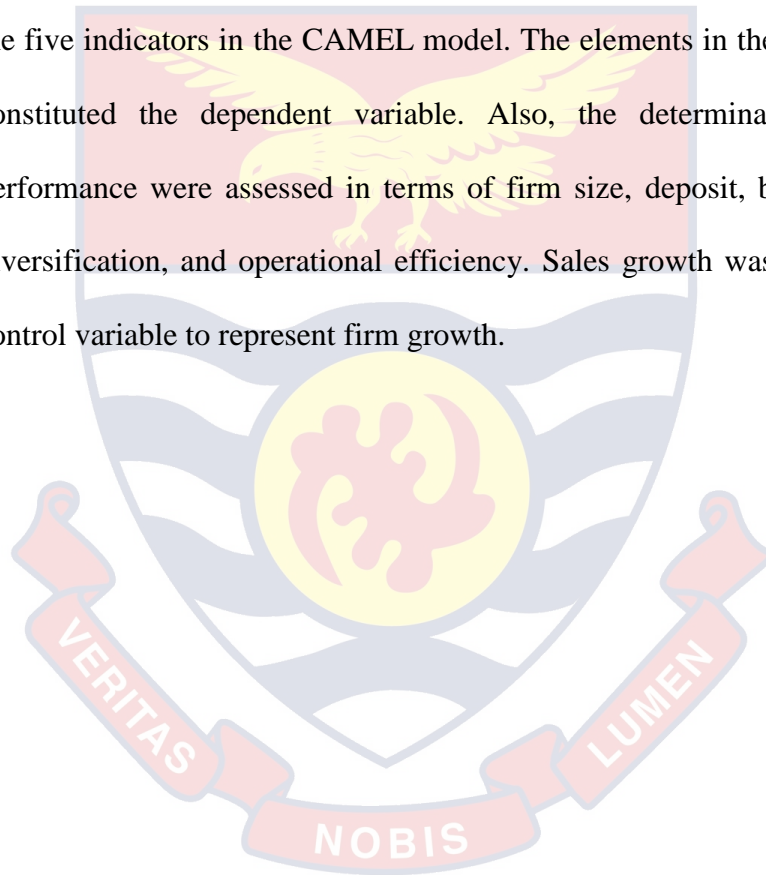
even though they followed the same measurement of operational efficiency. The distinction in evidence produced in the two studies could be attributed to the moderating effect of firm size. That is, smaller firms tend to operate at an optimum level of efficiency relative to the larger ones (Sanjay & Swati, 2015).

Moreover, Ramji (2018), in his study, found that operational efficiency is one important internal factor that contributes significantly to the financial performance of financial institutions. Ramji (2018) opined that the operational efficiency of firms is by extension a measure of how management has been efficient in translating the organisational resources into revenue while controlling costs. The study of Ramji (2018) further measured operational efficiency differently by using the ratio of operating profit to income which other researchers including Sangmi and Nazir (2010) subscribe to. Higher operating profit to total income represents operational efficiency of firms and the higher the operational efficiency, the higher the financial performance; while lower operating profit to total income represents operational inefficiency and lower financial performance.

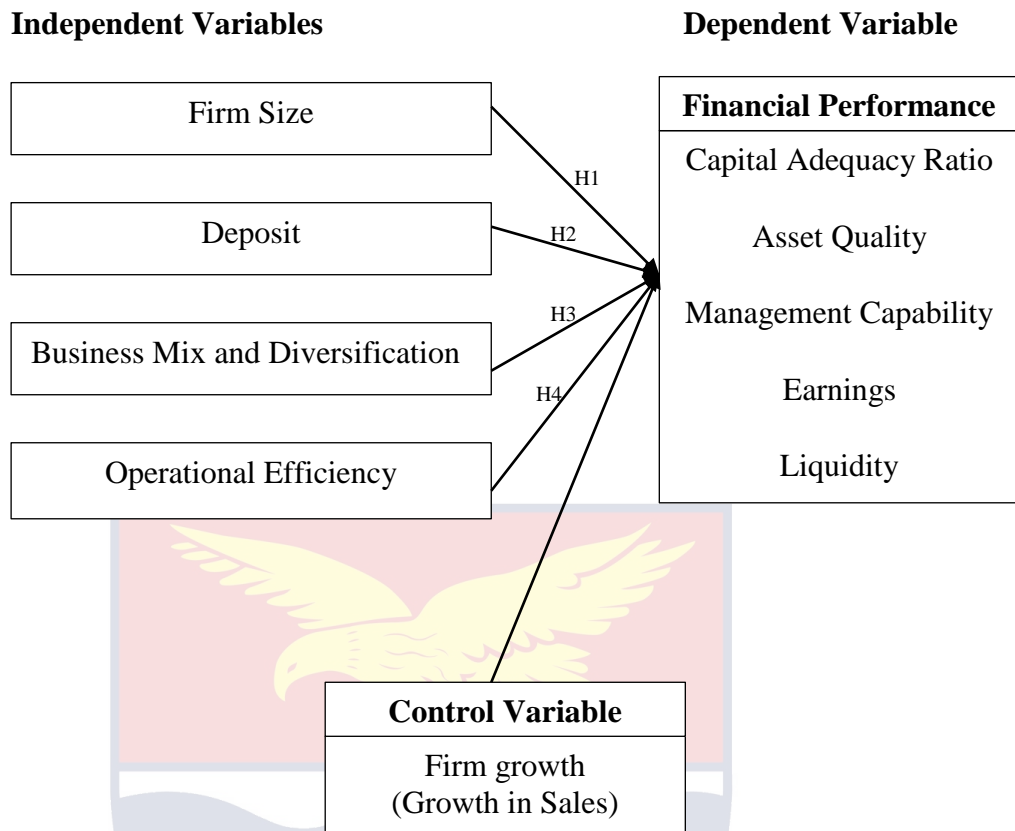
Since non-bank financial institutions such as co-operative unions earn interest income rather than merchandise operating profit. Other measures such as the ratio of expense to total assets have been suggested as alternative measures of operational efficiency (Ameur & Mhiri, 2013). With this measure of operational efficiency, Ameur and Mhiri (2013) found a significant positive relationship between operational efficiency and financial performance. This present study, therefore, expected a positive relationship between operational efficiency and the financial performance of co-operative credit union firms.

## Conceptual Framework

The investigation regarding the determinants of financial performance of co-operative unions in the Central Region of Ghana was put into perspective and context using the illustration presented in Figure 2. This study assessed and measured financial performance using the CAMEL model whose elements are capital adequacy ratio, asset quality, management capability, earnings, and liquidity. Hence, financial performance was proxied based on the five indicators in the CAMEL model. The elements in the CAMEL model constituted the dependent variable. Also, the determinants of financial performance were assessed in terms of firm size, deposit, business mix and diversification, and operational efficiency. Sales growth was introduced as a control variable to represent firm growth.







*Figure 2: Conceptual Framework*  
 Source: Author's Construct, Sackey (2021)

From Figure 2, the link between firm size and financial performance was demonstrated by hypothesis 1, which reflects the first objective. The connection between deposit and financial performance is demonstrated by hypothesis 2, which is also in line with objective 2. Objective 3 and hypothesis 3 were demonstrated by the link between business mix and diversification and financial performance. Objective 4 and hypothesis 4 were demonstrated by the link between operational efficiency and financial performance. The role or contribution of firm growth (growth in sales) towards firm performance is shown by the link between the control variable and firm performance. Thus, the overall relationships between the variables of the study are simplified by the conceptual framework.

## Chapter Summary

This chapter discussed the theoretical review concerning the factors that determine the financial performance of co-operative unions in the Central Region of Ghana. Chapter Two also reviewed some concepts with respect to the overview of credit unions in Ghana. The empirical relationship between firm size, deposit, operating efficiency, and business mix and diversification as determinants and financial performance were also presented. Finally, the study presented the conceptual framework which put the study into context.



## CHAPTER THREE

### RESEARCH METHODS

#### Introduction

Chapter three of this study considers the research method employed in assessing the factors that influence financial performance of co-operative unions in the Central region of Ghana.” The research approach, research design, data collection source, population and sample procedure were all described in this Chapter. Other key issues which the Chapter discussed include the definition and measurement of variables, model specification, and data processing and analysis.

#### Research Approach

The quantitative research approach was adopted by this study in achieving the set objectives. Quantitative research focuses on collecting numerical facts and figures and making generalisations across groups of entities or offering explanations about a phenomenon (Babbie, 2010). The main objective of quantitative research is to assess the connection between variables; and also, to examine the cause-and-effect relationship between variables. It also underscores how a manipulated variable influences another variable under a defined condition and setting (Mujis, 2010).

The main advantage with the employment of the quantitative approach is that it allows for replication of the same phenomenon and therefore has a high reliability level. Given the study’s purpose of assessing the wide range of factors that influence financial performance, the quantitative approach was considered ideal for this study.

## Research Design

The study employed the explanatory design in analysing the “factors that influence financial performance of co-operative unions in the Central Region of Ghana.” The research design represented an overall blueprint that the study followed in achieving the objectives of the study. The explanatory research design is also referred to as causal research and per this study, it provided the extent to which one or more variables influence another variable (Zikmund, Babin, Carr, & Griffin, 2012). The focus of the explanatory design lies within investigating a specific problem to offer explanations to the patterns of connections between variables. Considering the objectives and hypotheses of the study, exploratory research was considered ideal for this study.

## Source of Data Collection

Data that was used for the analysis of the objectives of this study was obtained from secondary sources; mainly from the financial statements of the co-operative unions in the Central Region of Ghana. Secondary data already existed in the financial statements of the firms, and therefore, there was no need to solicit first-hand information from the management or members of the respective credit unions within the Region. Secondary data was collected on firm-specific variables. That is, “both the dependent variable (financial performance) and the independent variables” (firm size, deposit, business mix and diversification, and operational efficiency). Data on all variables was collected over five years from 2015 to 2019. Based on the availability and accessibility of data covering the five years, the study collected data on the

stated variables for 15 co-operative unions. In all, the study collected 75 data points (5 years by 15 institutions). This means that the study employed panel dataset for analysis.

### **Population**

The present study focused on examining the “factors that influence the financial performance of co-operative unions within the Central Region of Ghana.” According to the Credit Union Association of Ghana (2020), there is a total of 36 “credit unions in the Central Region of Ghana.” The names and order details of these credit unions are presented in Table 7 in the Appendix of this study. With reference to the Appendix, it can be seen that there are 36 co-operative unions in the Central Region of Ghana, among which 10 (28%) of them are Parish-based, 22 (61%) of them are workers-based, and 4 (11%) are community-based credit unions. Furthermore, the oldest credit union to be established in the Central Region of Ghana was Swedru Teachers Credit Union which was established in 1970. Similarly, among the newest co-operative unions formed “in the Central Region of Ghana” were founded in 2007 and this was the Assin Fosu Community Credit Union.

### **Sampling Procedure**

“The study adopted a purposive sampling procedure to select 15 out of the 36 credit unions in the Central Region of Ghana to collect data for this study.” The purposive sampling procedure was adopted for this study. That is, credit unions that have complete financial data availability were selected as samples. The preliminary inquiry led to the selection of 15 credit unions

(Progressive Community; TOPP Employees; Dunkwa Traders; Oguaa Teachers'; Resourceful Teachers; Swedru Teachers; ECG Central; University of Cape Coast; Awutu Efutu Senya District Teachers; Monument; Abura-Asebu-Kwamankese District Teachers'; Agona District Workers'; Adjumako Eyan Essiam Teachers; Swedru Emmanuel; and University of Education Winneba).

These 15 credit unions constituted the sample for the study and the data collected for analysis was therefore taken from the annual reports and financial statements of these credit unions.

### Measurement of Variables

“The dependent variables used for this study were the elements in the CAMEL model (Capital adequacy ratio, Asset quality, Management capability, Earnings, and Liquidity) which generally are used as a proxy” for measuring financial performance. The independent variables namely firm size, deposit, business mix and diversification, and operational efficiency. The indicators for measuring the dependent variables in the study were presented in Table 1.

**Table 1: Measurement of Financial Performance (CAMEL Model)**

Variable	Measurement
Capital Adequacy Ratio	Total Equity/Total Assets
Asset Quality	Loan Loss Provision/Total Loans
Management Capability	Cost-to-income Ratio
Earnings	<ul style="list-style-type: none"> <li>• Returns on Assets</li> <li>• Returns on Equity</li> </ul>
Liquidity	Gross Loans to Total Deposits

Source: Roger, Ali and Bojan (2018)

Table 2 provided details on the measurement of the independent variables specific to this study. These were firm size, deposit, business mix

and diversification, and operational efficiency. The expected relationships on each of the independent variables were also provided based on the review of literature.

**Table 2: Measurement of Independent Variables**

Variable	Measurement	Expectation
Firm size	Log of Total Assets	-/+
Deposit	Log of Total Deposit	+
Business Mix & Diversification	Operating Income/Total Assets	+
Operational Efficiency	Operating Expense/Total Income	+

Source: Roger, Ali and Bojan (2018)

The selection of the variables (both the dependent and the independent) was based on justifications that were rooted in literature. Firstly, the dependent variables which measured “financial performance” based on the CAMEL model enabled the study to assess the “financial performance” of co-operative credit unions from a wholistic point of view. For example, the use of the five elements in the camel model enabled the study to assess financial performance in terms of the capital adequacy of co-operative credit unions for policy direction; it also enhanced the study to draw insight into the asset quality of co-operative credit unions; it allowed the study to have an appreciation of the extent of the capability of management of co-operative credit unions; as well as the ability to obtain evidence on earnings and liquidity positions of co-operative credit unions.

Furthermore, the measurement of the independent variables (firm size, deposit, business mix and diversification, and operational efficiency) were based on the justification which compares with the one provided by the study



of Roger, Ali and Bojan (2018). For example, firm size was measured in terms of the log of total deposit because according to Roger, Ali and Bojan (2018), the total assets of firms adequately determines whether or not a firm is large or small and whether or not a firm has the capability of expanding even from the short term into the long term. There is, therefore, the better case built on the use “of total assets” as a measure of firm size as opposed to other measures such as the “number of employees” and the size of fixed tangible assets, among others.

Also, ‘deposit’ was measured in terms of the log of total deposit because total deposit best represents itself as compared to other conventional ratios such as the “ratio of total deposits to total assets.” Business mix and diversification, which was measured by the “ratio of operating income to total assets” was so because proper diversification of the assets of the co-operative credit unions is a strong basis for enhancing or boosting their operating income. Hence, a higher “operating income to total assets ratio” provides a basis for thinking that the diversification process of a firm has yielded positive results. Finally, operational efficiency was measured in terms of the ratio of operating expense to total income.

Management whose operations have been efficient should be able to reduce cost/expense while making the optimal level of income. Increased expense relative to low income connotes a higher expense-to-income ratio and that reflects poor operational efficiency while lower expense against higher income produces lower expense to income ratio which connotes better operational efficiency. According to Roger, Ali and Bojan (2018), the best way to know whether a firm has been operationally efficient is to compare its

expense to the income generated by those expenses. Based on the fact that efficiency in a firm's operations can be measured by the expense relative to income, this study adopted the operating expense to total income ratio to measure the level of operational efficiency of Co-operative Credit Unions.

### **Data Processing and Analysis**

Data on the variables were primarily gathered using Microsoft Excel. The gathered data was then transported to Version 15 of Stata for processing. The analysis of the data was done using the dynamic linear regression analysis for all four objectives of the study. Each of the null hypotheses was tested at the conventional levels of significance at 10%, 5%, and 1%. The study also analysed the descriptive component where the mean values, “standard deviation, minimum and maximum values” of the respective variables were assessed.

### **Model Specification**

The nature of the data used for the study embodies panel data. Also, the dependent variable of the study is autoregressive – its current value can be influenced by or depends on its previous (lagged) value. Considering the autoregressive nature of the dependent variable and the panel nature of the data used for the study, a dynamic panel model was deemed appropriate. Hence, the system dynamic “general method of moments (GMM) estimation” was employed by the study to investigate the “factors that affect the financial performance of Credit Unions in the Central Region of Ghana.” The general method of moment is a statistical tool for estimating parameters in statistical

models. It is mostly applied where the parameter of interest is finite-dimensional, whereas the full shape of the data’s distribution may not be known, and therefore maximum likelihood estimation is not applicable. The study sampled 15 credit unions that had their financial statement and annual reports available. Thus, the choice of Credit Unions was based on the availability of data required for the study. The estimated financial performance (“capital adequacy, asset quality, management capability, return on equity, and liquidity”) model was given as:

$$\ln ROE_{it} = \beta_1 \ln ROE_{it-1} + \beta_2 \ln TA_{it} + \beta_3 GrthSales_{it} + \beta_4 \ln BMD_{it} + \beta_5 OE_{it} + \beta_6 totalDep2TA_{it} + \varepsilon_{it} \quad (1)$$

$$\ln CAR_{it} = \beta_1 \ln CAR_{it-1} + \beta_2 \ln TA_{it} + \beta_3 GrthSales_{it} + \beta_4 \ln BMD_{it} + \beta_5 OE_{it} + \beta_6 totalDep2TA_{it} + \varepsilon_{it} \quad (1)$$

$$\ln AQ_{it} = \beta_1 \ln AQ_{it-1} + \beta_2 \ln TA_{it} + \beta_3 GrthSales_{it} + \beta_4 \ln BMD_{it} + \beta_5 OE_{it} + \beta_6 totalDep2TA_{it} + \varepsilon_{it} \quad (1)$$

$$\ln MC_{it} = \beta_1 \ln MC_{it-1} + \beta_2 \ln TA_{it} + \beta_3 GrthSales_{it} + \beta_4 \ln BMD_{it} + \beta_5 OE_{it} + \beta_6 totalDep2TA_{it} + \varepsilon_{it} \quad (1)$$

$$\ln LIQ_{it} = \beta_1 \ln LIQ_{it-1} + \beta_2 \ln TA_{it} + \beta_3 GrthSales_{it} + \beta_4 \ln BMD_{it} + \beta_5 OE_{it} + \beta_6 totalDep2TA_{it} + \varepsilon_{it} \quad (1)$$

From the models, “it” represents panel data system. The variables and their meanings are presented in Table 3.

**Table 3: Definitions for Variables in the Models**

Variables	Definition
lnROE	Natural logarithm of return on equity
lnROE <sub>it-1</sub>	Lag dependent variable
lnTA	Natural logarithm of Total Assets
GrthSales	Growth in sales
lnBMD	Natural log of Business Mix and Diversification
OE or lnOE	Operational Efficiency or the Natural logarithm of operational efficiency
totalDep2TA	The ratio of total deposit to Total Asset

Source: Sackey (2021)

Equation (1) was estimated using the systems dynamic panel estimation technique by Roodman (2009a, 2009b). Using this technique allows for the presence of the lag dependent variable to help assess the autoregressive nature of financial performance measured by “return on equity, capital adequacy ratio, the cost-to-income ratio, asset quality, and liquidity.” By way of differencing, Roodman (2009a) systems dynamic panel estimation technique also corrects for the endogeneity resulting from the inclusion of the lag dependent variable. Also, the application of the instrumental variable approach helps to resolve the endogeneity problem and lessens overidentification in the course of accounting for cross-sectional dependence.

Thus, the systems GMM approach by Roodman (2009a, 2009b), popularised by Agyei, Marfo-Yiadom, Ansong, and Idun (2020), and Boateng, Asongu, Akamavi, and Tchamyu, (2018) was deemed to be appropriate for the study. The sample of credit unions used for estimating each of the models was more than the number of years (5) and hence, satisfies the condition of use of the estimation technique.

### **Chapter Summary**

Chapter three of this study focused on the research methods employed in analysing the objectives of the study. Based on data availability, the study sampled 15 out of 36 credit unions in the Central Region of Ghana and obtained secondary data in terms of financial performance, firm size, deposit, business mix and diversification, and operational efficiency for the analysis. This chapter also discussed the explanatory design as the design for the study. The use of the quantitative approach was also justified in this Chapter. The

Chapter further highlighted that the system dynamic general method of moments (GMM) estimation technique was employed in answering all four objectives and testing the hypotheses.



## CHAPTER FOUR

### RESULTS AND DISCUSSION

#### Introduction

“The results on the data collected on the variables that affect financial performance and financial performance indicators of co-operative credit unions in the Central Region of Ghana are presented in this chapter.” This chapter further discussed the findings obtained on the objectives for this study. The study, first all, presented the descriptive statistics, followed by the system GMM regression results. The results are presented in tables throughout the work.

#### Descriptive Statistics

Descriptive statistics provide an overview of the distribution of the variables used for the study, as applied to the sampled co-operative “credit unions in the Central Region of Ghana.” The descriptive statistics of the variables used for the models (“return on equity, return on assets, the cost-to-income ratio, asset quality, and liquidity”) were presented in Table 4.

**Table 4: Descriptive Statistics**

Variable	Obs	Mean	Std. Dev.	Min	Max
ROE	75	0.8271246	0.7921586	-0.579553	3.299457
ROA	75	0.0414869	0.0324791	-0.050337	0.121685
CAR	75	0.0652015	0.0262768	0.013054	0.1295918
Liquidity	75	0.6083676	0.1426621	0.340689	0.9973488
CIR	75	6.861177	18.16741	-9.402739	143.5844
AQ	56	0.0281913	0.0239701	0.0003605	0.0819621
totalassets	75	7208077	6274432	365606.3	2.83e+07
GrthSales	59	0.1803378	3.027973	-15.00729	10.49952
OE	75	0.2251347	0.0951933	0.045769	0.5074448
BMD	75	0.0414869	0.0324791	-0.050337	0.121685
totalDep2TA	75	0.7406022	0.0868941	0.52662	0.9711567

Source: Field Survey (2021) Note: ROE signifies Return on Equity, ROA is Return on Equity, CAR is Capital Adequacy Ratio, CIR is Cost-to-income Ratio, AQ is Asset Quality, totalassets is Total Assets, GrthSales represents Growth in Sales, OE is Operational Efficiency, BMD is Business Mix and Diversification, and totalDep2TA is Total Depreciation to Total Assets.

From Table 4, the average return on equity recorded by credit unions over the 5 years was about 83% ( $SD = 79\%$ ), implying that the variation in return on equity among firms was very wide. Whereas the highest return on equity was about 330%, the minimum return on equity over the period was about -58%. With the return on assets, the average for the period was 4.1% ( $SD = 3.25\%$ ). This also reflects a high variation in the return on assets among the firms sampled for the study. Thus, negative returns on equity were recorded by some credit unions over the period of the study.

The lowest and highest capital adequacy ratio over the period of study was 1.3% and 12.6% respectively. On average, the capital adequacy ratio for the sampled credit unions over the period of study was 6.52% ( $SD = 2.63\%$ ). This meant that from the sample, a credit union on average could hold on to



about 6.2% of their total capital on reserve to cater for some amount of losses before suffering the risk of becoming insolvent. There appeared to be a lower variation across the firms concerning capital adequacy ratio, implying that the variation in the capital adequacy ratio across firms was not so wide over the 5 years.

The average liquidity ratio of the sampled firms over the period was 0.61:1 ( $SD = 0.14:1$ ). The lowest and highest liquidity ratio for the credit unions was 0.34:1 and approximately 1:1 respectively. The standard deviation reflects a relatively lower variation of liquidity among credit unions. The average total assets of credit unions in the period of study was about GHS7,208,077 ( $SD = GHS6,274,432$ ), indicating a high variation in the value of assets across credit unions, as depicted by a minimum of GHS365,606.30 over the period. The average measure of operational efficiency for credit unions over the five years was 22.5% ( $SD = 9.5\%$ ) with a maximum and minimum of 50.7% and 4.8% respectively. This meant that on average, the proportion of total income spent on operating expenses ranged between 4.8% to 50.7%.

Over the 5 years, the cost-to-income ratio of sampled credit unions ranged between -9.4 and 143.6 with an average of 6.9 ( $SD = 18.2$ ), depicting a high amount of operating cost relative to operating income. That is, on average, credit unions were seen to be incurring operating costs in excess of their operating revenue and could raise issues about the managerial capability or competency of credit unions. In respect of business mix and diversification, the lowest and highest ratio for the period were -0.05 and 0.12 respectively, with an average of 0.04 ( $SD = 0.03$ ), indicating a high spread or variation over

the period across the credit unions. The ‘business mix and diversification’ was measured as the ratio of operating income to total assets – thus, the descriptive summary indicates that credit unions could make lower returns (operating income) from their total assets.

Finally, the ratio of total deposit to total assets for sampled firms ranged between 52.7% to 97.12%. The average total deposit to total assets for the 5 years was 74.06% ( $SD = 8.69\%$ ), indicating a lower deviation of the ratio across credit unions during the period of study. This meant that a greater proportion of the total assets of the credit unions are from the deposits they receive from customers.

### **Correlation Matrix**

The correlation matrix was employed to establish the pairwise relationship between the regressors and “to test for the presence of multicollinearity among the explanatory variables,” which may impact the reliability of the results. The results were presented in Table 5. Going by the rule of thumb of 0.8 as the cut-off point for determining the presence of multicollinearity, the results suggest “that the presence of multicollinearity” among the explanatory variables is low. The significance of the correlation matrix was to help determine the level of association between the variables in the model. Weak correlation among the independent variables implies the absence of multiple correlation among the independent variables.

**Table 5: Pairwise Correlations**

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) lnROE	1.000										
(2) lnROA	0.923 (0.000)	1.000									
(3) lnCAR	-0.567 (0.000)	-0.207 (0.081)	1.000								
(4) lnLiquidity	0.030 (0.805)	0.154 (0.197)	0.189 (0.105)	1.000							
(5) lnCIR	-0.904 (0.000)	-0.940 (0.000)	0.286 (0.015)	-0.094 (0.433)	1.000						
(6) lnAQ	-0.246 (0.070)	-0.365 (0.006)	-0.101 (0.461)	-0.101 (0.458)	0.333 (0.013)	1.000					
(7) lnTA	0.043 (0.719)	0.156 (0.190)	0.229 (0.048)	-0.159 (0.174)	-0.141 (0.238)	0.062 (0.648)	1.000				
(8) GrthSales	0.076 (0.575)	0.111 (0.410)	-0.044 (0.742)	0.058 (0.661)	-0.059 (0.662)	-0.072 (0.653)	0.149 (0.261)	1.000			
(9) lnOE	-0.453 (0.000)	-0.439 (0.000)	0.236 (0.042)	-0.394 (0.000)	0.678 (0.000)	0.163 (0.229)	0.021 (0.859)	-0.049 (0.715)	1.000		
(10) lnBMD	0.923 (0.000)	1.000 (0.000)	-0.207 (0.081)	0.154 (0.197)	-0.940 (0.000)	-0.365 (0.006)	0.156 (0.190)	0.111 (0.410)	-0.439 (0.000)	1.000	
(11) IntotalDep2TA	-0.510 (0.000)	-0.576 (0.000)	0.087 (0.457)	-0.330 (0.004)	0.628 (0.000)	0.179 (0.187)	-0.105 (0.370)	-0.112 (0.399)	0.447 (0.000)	-0.576 (0.000)	1.000

Source: Field Survey (2021) Note: ROE signifies Return on Equity, ROA is Return on Equity, CAR is Capital Adequacy Ratio, lnLiquidity is Liquidity, CIR is Cost-to-income Ratio, AQ is Asset Quality, GrthSales represents Growth in Sales, lnOE is Operational Efficiency, lnBMD is Business Mix and Diversification, and IntotalDep2TA is Total Depreciation to Total Assets.

### Regression Results

The regression outputs of the system GMM estimations were summarised in Tables 6. Contained in Table 6 are the results for all the performance measures namely “capital adequacy, asset quality, management capability, return on equity, and liquidity.” The results of the “return on equity, capital adequacy ratio, cost-to-income ratio, asset quality, and liquidity” models are contained in columns 1, 2, 3, 4, and 5 respectively of Table 6. From the table 6, the diagnostics in terms of autocorrelation, Sargan, and Hansen J-tests, and the “number of instruments relative to the number of observations” and cross-sections indicate that exogenous instruments were used in the study.

Even though there were relatively insufficient data observations available to compute the diagnostic for instrument proliferation concerning the asset quality model, the instrument proliferation was generally not a problem for all the models. Practically, the diagnostics indicate that the models for the study were well specified. The F-statistics that tests the overall goodness-of-fit of models were all significant at 1% (\*\*\*) .

For the various names of the variables in Table 6, ROE signifies Return on Equity, CAR is Capital Adequacy Ratio, lnCIR is the natural log of Cost-to-income Ratio, lnAQ is the natural log of Asset Quality, lnLiquidity is the natural log of Liquidity, lnTA is the natural log of Total Assets, GrthSales represents Growth in Sales, lnOE is the natural log of Operational Efficiency, lnBMD is the natural log of Business Mix and Diversification, and lnTotalDep2TA is Total Depreciation to Total Assets. L.lnROE, L.lnCAR, L.lnCIR, and L.lnAQ represent the lag dependent variables for return on asset, capital adequacy ratio, the cost-to-income ratio, and asset quality respectively.

**Table 6: Regression Results**

Variables	(1) lnROE	(2) lnCAR	(3) lnCIR	(4) lnAQ	(5) lnLiquidity
lnROE <sub>it-1</sub>	0.904*** (0.173)				
lnCAR <sub>it-1</sub>		1.070*** (0.118)			
lnCIR <sub>it-1</sub>			0.413*** (0.0832)		
lnAQ <sub>it-1</sub>				-1.103* (0.578)	
lnLiquidity <sub>it-1</sub>					0.796*** (0.196)
lnTA	-0.0254 (0.0994)	-0.0354 (0.0931)	-0.0562 (0.0570)	0.274 (0.600)	-0.0301 (0.0582)
GrthSales	0.261*** (0.0699)	0.0439* (0.0212)	-0.138*** (0.0254)	-0.0703* (0.0363)	-0.0181** (0.00792)
lnBMD	0.380* (0.180)	0.0861 (0.0505)	-0.686*** (0.0976)	-0.230 (0.265)	-0.0791*** (0.0183)
OE	1.756* (0.929)	1.061** (0.412)	4.452*** (0.479)		-1.861*** (0.384)
lnOE				1.929** (0.878)	
totalDep2TA	5.823** (2.488)	1.053** (0.458)	-1.088 (0.911)		
IntotalDep2TA				7.512 (8.195)	-0.161 (0.256)
Constant	-3.305 (2.764)	0.123 (1.595)	-0.967 (1.101)	-8.341 (9.073)	0.445 (0.716)
AR (1)	0.025	0.054	0.160	0.821	0.154
AR (2)	0.816	0.980	0.546	0.694	0.550
Sargan OIR	0.934	0.450	0.033	0.751	0.000
Hansen OIR	0.758	0.861	0.195	0.869	0.573
DHT for Instruments					
(a) GMM Instruments for levels					
H excluding group	0.659	0.724	0.983	-	0.289
Diff (null, H=exogenous)	0.678	0.792	0.130	-	0.597
(b) IV (years, eq(diff))					
H excluding group	0.684	0.856	0.140	0.699	0.482
Diff (null, H=exogenous)	0.626	0.424	0.630	0.959	0.636
Fisher	7060.03***	16654.24***	1783.51***	133.42***	1938.59***
Instruments	14	14	14	10	14
Observations	56	57	56	35	57
Number of Credit Unions	15	15	15	13	15

Source: Field Survey (2021)

From Table 6, except for asset quality, the lag dependent variables for all the models were found to be positive and statistically significant at 1%. For asset quality, the lag dependent variable was negative but statistically significant at 10%. This might not have happened or occurred by chance because the standard error of the estimated lag dependent coefficient is far less than the actual estimate – thus, the estimate proves to be valid. Whereas the lagged asset quality could cause a 1.103 unit change in the current value of asset quality, the lagged values of lnROE, lnCAR, lnCIR, and lnAQ could stimulate significant changes in their current values by 0.904, 1.07, 0.413, and 0.796 unit for “return on equity, capital adequacy ratio, cost-to-income ratio, and liquidity” respectively. Therefore, the lagged (previous year’s) values of the performance measures (“capital adequacy, asset quality, management capability, return on equity, and liquidity”) could significantly influence the current performance of credit unions within the Central Region.

Aside from the lagged return on equity, the significant contributors to return on equity for credit unions were revealed to be growth in sales (significant at 1%), business mix and diversification (significant at 10%), operational efficiency (significant at 10%), and total deposit to total assets (significant at 5%). Total asset was the only variable that had a negative and statistically non-significant effect on the return on equity of credit unions. With capital adequacy ratio, growth in sales, operational efficiency, and total deposit to total assets were the significant contributors for credit unions in the Central Region over the period of study. The positive effect exhibited by growth in sales, operational efficiency, and total deposit to total assets on the



capital adequacy ratio of firms were statistically significant at 10%, 1%, and 5% respectively.

The results in Table 6 indicate that growth in sales, business mix and diversification, and operational efficiency were the variables that could cause substantial changes or variations in the cost-to-income ratio of credit unions in the Central Region. Even though they all proved to be statistically significant at 1%, whereas growth in sales and business mix and diversification had a negative relationship with the cost-to-income ratio of firms, operational efficiency had a positive relationship with the cost-to-income ratio of credit unions over the period. Also, growth in sales and operational efficiency were the variables that were revealed to have a substantial relationship with the asset quality of credit unions. The relationships were significant at 10% and 5% respectively and whereas growth in sales exhibited a negative relationship, operational efficiency exhibited a positive relationship with asset quality.

Concerning liquidity, growth in sales, business mix and diversification, and operational efficiency were revealed to be the variables that could negatively influence the liquidity of credit unions in the Central Region of Ghana, as evidenced by the negative coefficients presented in Table 6. The negative relationship between growth in sales and liquidity was significant at 5% whereas the negative relationship between business mix and diversification and operational efficiency were all significant at 1%.



## Discussion of Findings

### The relationship between firm size and financial performance

Firm size, measured as the natural log of the total asset holdings of credit unions was found to have a negative but non-significant relationship with return on equity, capital adequacy ratio, cost-to-income ratio, and liquidity; and a positive but non-significant relationship with asset quality. From the regression outputs in Table 6, it was not surprising that these relationships were statistically non-significant because the standard errors attributed to the regression coefficients were all higher than the original estimates. Therefore, once the standard errors were higher than the regression estimates, it could be deduced that the relationship expressed between the variables only occurred by chance. In other words, the insignificance could be due to the random selection of the samples.

Consequently, as the p-values of the various coefficients of the indicators of financial performance exceed 5%, there exists sufficient evidence in support of the null hypothesis that there is no significant relationship between firm size and financial performance. Thus, we fail to reject the claim that there exists no relationship between the size of co-operative credit unions and their financial performance. The implication is that a change in the asset base of credit unions would not cause any substantial change in their financial performance.

The findings of the study concerning the relationship between the size of credit unions and firm performance confirm the results of Yesmine and Bhuiyah's (2015) study in which they concluded that firm size and financial performance has no significant relationship. The findings from this study,

however, is contrary to the results reached in the studies of Roger, Ali and Bojan (2018) and Pasiouras and Kosmidou (2007) who instead found significant relationships. Thus, the findings do not drive away from the study's expectation that the size of credit unions has either a negative or positive relationship with their financial performance, even though it was statistically non-significant. It is therefore inconclusive whether or not credit unions could improve their performance when they increase their asset base – the mere increase in total assets would not yield automatic improvement or deterioration in performance. The ability of credit unions to make more returns from additional assets may depend on the quality and expertise of management of these firms, and other factors.

### **The relationship between deposit and financial performance**

Deposit, measured as the total deposit to total assets of credit unions was found to have a positive and significant relationship with return on equity and capital adequacy ratio. This means that a unit increase in the total deposit recorded by credit unions would result in a 5.823 units increase in return on equity and a 1.053 unit change in capital adequacy ratio. Thus, the wealth of owners would be maximised if the total deposit recorded by credit unions increase. An increase in the size of deposit directly affects the quantum of loans credit unions could grant. Consequently, high volumes of deposit raise interest income which directly increases the profit margin, returns on equity and returns on assets (Tuyishime et al., 2015). The positive relationship between total deposit to total assets and liquidity was statistically non-

significant, just as the negative relationships between deposit to total assets, and cost-to-income ratio and asset quality also proved non-significant.

The p-values of the coefficients of the indicators (return on equity and capital adequacy ratio) of financial performance were significant at less than 5% and therefore, there exists “insufficient evidence in support of the null hypothesis that there is no significant relationship between deposit and financial performance of co-operative credit unions.” Thus, “based on the results for return on equity and capital adequacy ratio,” we reject the claim that there exists no relationship between the deposit of co-operative credit unions and their financial performance. The implication is that a change in the size of deposits recorded by co-operative credit unions would reasonably and sufficiently affect their financial performance, measured as return on equity and capital adequacy ratio.

However, the p-values of the coefficients of the indicators (cost-to-income ratio, asset quality, and liquidity) of financial performance are above the conventional levels for significance and therefore, there exists sufficient “evidence in support of the null hypothesis that there is no significant relationship” between deposit and financial performance (measured by cost-to-income ratio, asset quality, and liquidity) of co-operative credit unions. Thus, based on the results for cost-to-income ratio, asset quality, and liquidity, we fail to reject the claim that there exists no relationship between the deposit of co-operative credit unions and their financial performance. The implication is that an increase in the size of deposits recorded by co-operative credit unions would cause no reasonable or sufficient effect on their financial performance, measured as a cost-to-income ratio, asset quality, and liquidity. However, it

could be argued that the “financial performance of firms is hardly measured by cost-to-income ratio, asset quality, and liquidity and thus, the conclusion on return on equity and capital adequacy ratio,” as measures of financial performance is more realistic.

Overall, the findings of the study concerning the positive and significant relationships between deposit to total assets and return on equity and capital adequacy ratio were in line with the results from the works of Lee and Hsieh (2013) and Menicucci and Paolucci (2016) in which they argued that larger deposit to total assets ratio tends to increase the profitability of institutions that accept deposits through the increase in interest margin and thus, expected to significantly impact financial performance. The findings also commensurate those of Boadu’s (2015) study which focused on the assessment of the efficiency and productivity of co-operative unions in the Greater Accra region of Ghana and revealed that deposit, measured in terms of the savings of the members of credit unions, positively affects the efficiency and productivity of credit unions in the Greater Accra region of Ghana.

The study’s expectation that the total deposit to total assets of co-operative credit unions would have a positive relationship with the financial performance of firms was achieved in line with the return on equity, capital adequacy ratio, and asset quality. Even though the results from the study indicate a positive and statistically relationship with return on equity and capital adequacy ratio, management competency and other factors may come to play to effectively translate deposits (liability to credit unions) into assets before returns can be generated. Thus, the argument of Dietrich and Wanzenried (2014) that the ability of deposits to produce higher profitability

depends on the firm's ability to translate the deposit liability into assets and earn reasonable returns need not be overlooked by managers.

### **The relationship between business mix and diversification and financial performance**

Business mix and diversification was measured as operating income to total assets. From the results presented in Table 6, business mix and diversification were found to have a positive relationship (significant at 10%) with return on equity. A percentage increase in the business mix and diversification index would result in a 0.380 unit change in the return on equity of credit unions. Thus, the return on equity of credit unions would improve if they improve the amount of operating income from additional assets they acquire as a result of business mix and/or diversification. The findings also reveal a negative and significant relationship between business mix and diversification and cost-to-income ratio. A unit improvement in business mix diversification would result in a 0.686 reduction in the cost-to-income ratio of credit unions. The implication is that credit unions can perform well in terms of reduction in operating costs, provided measures are put in place to improve the returns they generate from the additional assets they acquire as a result of business mix and/or diversification. This, thus, reflects an improvement in financial performance.

It was also evident from the results presented in Table 6 that business mix and diversification have “a negative and statistically significant relationship” with the liquidity of credit unions. Thus, the more firms acquire additional assets in the name of business mix and/or diversification, the

amount of liquid funds available to credit unions reduces. A unit increase in the amount of assets in credit unions would lead to a 0.0791 unit reduction in their liquidity. Even though this finding is contrary to the study's expectation that business mix and diversification would have a positive influence on financial performance, the expectation holds for return on assets and cost-to-income ratio as measures of financial performance. The respective positive and negative relationships between capital adequacy ratio and asset quality were, however, proven non-significant.

Except for capital adequacy ratio and asset quality, the p-values of the coefficients of the indicators of financial performance are significant at the conventional levels and therefore, there exists insufficient "evidence in support of the null hypothesis that there is no significant relationship between business mix and diversification and the financial performance of co-operative credit unions." Thus, based on these results, we reject the claim that there exists no relationship between the business mix and diversification of co-operative credit unions and their financial performance. The implication is that a change in the business mix and diversification index of co-operative credit unions would reasonably and sufficiently affect their financial performance.

Generally, the study's findings concerning the relationship between business mix and diversification and financial performance (measured by return on assets and cost-to-income ratio) confirm the findings of Petria, Capraru and Ihnatov (2015) who revealed that business mix and diversification of financial institutions have a significant positive effect on their profitability. Management of credit unions should, however, consider that the effect of business mix, diversification and financial performance of firms



differ from one form to another, as argued by Juan and Manuel (2004). They contend that not all diversification is beneficial and successful diversification depends on the diversification strategy and the environment within which a business diversifies its portfolio.

### **The relationship between operational efficiency and financial performance**

The results revealed a positive and significant relationship between operational efficiency and all indicators of financial performance used in the study except for liquidity. A unit change in operational efficiency would result in a 1.756 unit change (significant at 10%) in return on equity, a 1.061 unit change (significant at 5%) in capital adequacy ratio, a 4.452 unit change (significant at 1%) in cost-to-income ratio, a 1.929 unit change (significant at 5%) in asset quality, and a 1.861 unit change (significant at 1%) in firms' liquidity. The implication is that improvement in the operational efficiency of credit unions would result in improved financial performance in terms of higher returns on equity, capital adequacy ratio, and asset quality.

The p-values of the coefficients of the indicators of financial performance are significant at the conventional levels and therefore, there exists insufficient evidence in support of the null hypothesis that there is no significant relationship between operational efficiency and the financial performance of co-operative credit unions. Thus, based on these results, we reject the claim that there exists no relationship between the operational efficiency of co-operative credit unions and their financial performance. The implication is that enhancements in the operational efficiency of co-operative



credit unions would reasonably and sufficiently affect their financial performance.

The findings of the study commensurate those of Rashid and Jabeen (2016) who revealed that one of the major variables that influence the financial performance of both banks and non-bank financial institutions is the operational efficiency of financial institutions. The findings also commensurate those revealed by the study of Ali and Bojan (2018). They found that financial institutions that incur higher operating efficiency tend to increase their financial performance in terms of higher capital adequacy. However, considering the study's negative relationship in respect of operational efficiency and liquidity of credit unions, there exists a contradiction in this finding to Ali and Bojan's result concerning operating efficiency and liquidity. That notwithstanding, the study's general expectation that there exists a positive relationship between operational efficiency and financial performance was met.

### **Growth in sales and financial performance**

The study controlled for sales growth as a determinant of financial performance of firms (firm growth) and revealed that whereas a positive and significant relationship exists between growth in sales and the return on equity and the capital adequacy ratio of credit unions, there exist negative and significant relationships between growth in sales and the cost-to-income ratio, asset quality, and liquidity of credit unions. The implication is that credit unions can increase their returns on equity and capital adequacy ratio if they increase the amount of sales revenue they make in a given period and thereby,

ensuring maximum wealth for owners. Likewise, a reduction in the cost-to-income ratios of firms will be achieved if credit unions boost their revenue-generating capabilities or if they implement measures to increase their sales revenue.

Asset quality of credit unions may reduce (significant at 10%) if high revenue is recorded. The intuition is that the amount of non-performing loans in credit unions could be reduced by ensuring that more revenue is generated. Increasing revenue generation means that there would be fewer defaulters of loans and consequently increasing the financial performance of credit unions. However, the liquidity of credit unions will reduce if a greater proportion of the revenue they generate is in credit terms rather than in cash. The results, however, indicate that growth in sales revenue is also a determinant of the “financial performance of credit unions.”

### **Chapter Summary**

This chapter analysed the variables that affect financial performance indicators of co-operative credit unions in the Central region of Ghana. Statistical diagnostics in terms of autocorrelation, Sargan, and Hansen J-tests, and the number of instruments relative to the number of observations and cross-sections were performed on the data to ensure that the models used were fit for the study. The system GMM estimation revealed that firm size, business diversification, operational efficiency, and deposit influence the financial performance of credit unions in the Central Region of Ghana.

## CHAPTER FIVE

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### Introduction

This chapter climaxed the entire study and it presented the summary of the findings on the factors that influence the financial performance of selected co-operative credit unions in the Central Region of Ghana. This chapter also presented the conclusions, recommendations as well as suggestions for further studies.

#### Summary of the Study

The performance of financial institutions in Ghana has become very topical in the backdrop of the collapse of many institutions in the financial sector of Ghana. Among the key institutions that have been folded up in the financial sector of Ghana are those in the banking sector and savings and loans companies of Ghana. Firms in the Co-operative Credit Union industry however seem to have been stable and maintained their survival rate and little is heard about them in terms of the rising level of collapse in the counterpart firms in the banking and savings and loans industries. While Co-operative Credit Unions have been able to maintain their survival rate over the years, there is no sufficient evidence to show that the steady survival rate is due to good performance. Coupled with this fact and recognising the importance of the non-bank financial institutions in Ghana, there is the need to investigate the financial performance of co-operative credit unions in terms of the firm-specific factors.

Thus, the financial performance of Co-operative Credit Unions was examined in terms of important factors that are generally considered to be relevant in the financial sector. The main factors which this study analysed as being able to influence financial performance were firm size, deposit, business mix and diversification, and operational efficiency. The study further measured financial performance from the perspective of the CAMEL model (capital adequacy, asset quality, management capability, earning (returns on assets and returns on equity), and liquidity). The study obtained panel data on the aforementioned variables from 2015 to 2019 for 15 selected Credit Unions in the Central Region of Ghana. The results of the study were analysed using both descriptive statistics and the system dynamic general methods of moments (GMM) estimations. The study also performed statistical diagnostics in terms of autocorrelation, Sargan, and Hansen J-tests, and the number of instruments relative to the number of observations and cross-sections.

### **Summary of Key Findings**

Based on the four objectives set for this study, the following were the summary of the results obtained from the system GMM regression analysis of the data.

Concerning the study's first objective which analysed the relationship between firm size and financial performance, the study found that the size of co-operative credit unions has a negative but non-significant effect on their return on equity and capital adequacy ratio. Thus, firm size was found to have no significant effect on the financial performance of co-operative credit unions.

On the basis of the second objective which analysed the effect of deposit of credit unions on their financial performance, the study found that the return on equity and capital adequacy ratio are positively and significantly influenced by the size of 'deposit'. However, the positive relationship between total deposit to total assets and liquidity was found to be statistically non-significant and there also existed negative and non-significant relationships between deposit to total assets, and cost-to-income ratio and asset quality.

Regarding the third objective which assessed the influence of business mix and diversification on the financial performance of credit unions, the study found that efficient diversification of credit unions positively affects the return on equity of co-operative credit unions. Business mix and diversification were also found to have an indirect relationship with the cost-to-income ratio and the liquidity of co-operative credit unions. Furthermore, the study found a positive and negative relationship between capital adequacy ratio and asset quality respectively but both were non-significant.

In respect of the fourth objective which dealt with the effect of operational efficiency on financial performance indicators, the study found that the operational efficiency of credit unions significantly affects the capital adequacy ratio, asset quality, operational efficiency, and return on equity but not liquidity.

Lastly, the findings on the control variable, growth in sales revealed that, whereas, a positive and significant relationship exists between growth in sales and the return on equity and the capital adequacy ratio of credit unions, there exist negative and significant relationships between growth in sales and

the cost-to-income ratio, asset quality, and liquidity of co-operative credit unions.

## Conclusions

Based on the findings of the study, the following conclusions regarding the firm-specific factors that influence the financial performance of co-operative credit unions in the Central Region of Ghana were drawn:

The size of co-operative credit unions (in terms of their total assets) does not play a significant role in explaining the performance indicators such as return on equity, cost-to-income ratio, capital adequacy ratio, operational efficiency, and liquidity. Thus, the ability of co-operative credit unions to make more returns from additional assets may depend on the quality and expertise of management of these firms and other factors.

The study further concluded that high volumes of deposit raise interest income which directly increases the profit margin, returns on equity and returns on assets. Therefore, co-operative credit unions could increase their financial performance when they put in measures to increase the amount of deposits they generate from customers.

The study concluded that efficient diversification of credit unions would directly affect the return on equity of co-operative credit unions, thus improving their financial performance. Business mix and diversification could improve, by reducing, the cost-to-income ratio of co-operative credit unions and thereby, boosting their financial performance.

Another conclusion drawn was that except for liquidity, operational efficiency of the management of co-operative credit unions plays a significant



role in determining the size of capital adequacy, asset quality, earnings, and the cost-to-income ratio of co-operative credit unions in the Central Region of Ghana.

Nevertheless, growth in sales of co-operative credit unions significantly enhances the return on equity, capital adequacy ratio, and the cost-to-income ratio of co-operative credit unions. Asset quality and liquidity of credit unions, however, are not significantly affected by growth in sales.

In general, the study posed the broad conclusion that the firm-specific factors that influence the financial performance of co-operative credit unions were deposit, business mix and diversification, operational efficiency, and sales growth. Thus, these are the major determinants of the financial performance of Co-operative Credit Unions in the Central Region of Ghana.

### **Recommendations**

Based on the conclusions drawn, the study provided the following recommendations:

Based on the first conclusion, the ability of co-operative credit unions to make more returns from additional assets may depend on the quality and expertise of management of these firms, and other factors. The study recommended that management of co-operative credit unions should ensure improvement in their capabilities and expertise as well as other factors (such as growth in sales and deposit) to increase their firms' financial performance.

On the basis of the second and fifth conclusion, the study recommended that management of co-operative credit unions should aspire for growth in sales and encourage members of the respective credit unions to save



more money so as to positively enhance the interest margin of their firms and also to enhance their ability to create more assets (in the form of loans) to boost their return on equity and capital adequacy.

Based on the third conclusion, the study made the recommendation that the Co-operative Credit Union Association of Ghana should provide greater flexibility for their members to diversify their portfolios since there was sufficient evidence that diversification enhances the asset quality, earnings, and the cost-to-income ratio of credit unions.

Finally, the study recommended that the Co-operative Credit Union Association of Ghana should channel some of their resources towards providing training and refresher courses for the management of the various credit unions in order to help improve their management efficiency. This will invariably have a reflective effect on achieving greater earnings, improving liquidity, and enhancing earnings, cost-to-income ratio, capital adequacy, and asset quality.

### **Suggestions for Further Studies**

The study recommended that further studies collect data on all the credit unions in the Central region to help improve or add to the findings obtained in this study. It will also suffice to provide fresh evidence on whether or not there is any difference between the determinants of financial performance for workplace, community and parish co-operative credit unions in the central region of Ghana. Future studies should therefore consider the expansion of the scope to enrich the evidence available in the literature on this area of study.

Moreover, a comparative study could be done between co-operative credit unions across the regions in Ghana. This would reveal the major differences between the operational efficiencies and the levels of financial performance of these credit unions in Ghana and could serve as a guide to managers and policymakers in the country.



## REFERENCES

- Agyei, S. K., Marfo-Yiadom, E., Ansong, A., & Idun, A. A. A. (2020). Corporate Tax Avoidance Incentives of Banks in Ghana. *Journal of African Business*, 21 (4), 544 – 559.
- Ahorlu, W. (2009). Efficiency measurement using a true random effect and random parameter stochastic frontier models: an application to rural and community banks in Ghana. *Modern Economy*, 4, 864-870.
- Akenten, W., Odonkor, A., & Andoh, R. (2019). Credit unions in developing economies: membership benefits. *SSRN Electronic Journal*. 10.2139/ssrn.
- Ali, C., & Bojan, G. (2018). Determinants of financial performance of banks in Central and Eastern Europe. *Business and Economic Horizons*, 14(3), 513-529.
- Ali, G. & Bilil, E. (2018). The role of co-operative credit unions in financing micro-businesses in Ghana: A comparative study of the Oguuaa teachers' and the UCC credit unions. *International Journal of Economics, Commerce and Management*, 3(9), 34-43.
- Ameur, C. & Mhiri, H. (2013). An examination of banks' cost efficiency in Central and Eastern Europe. *Procedia Economics and Finance*, 2(2), 544-551.
- Asare, B. (2015). Evaluation of the financial performance of Ga rural bank limited from 2010-2013. *Economic Annals*, 54(182), 93-118.

- Athanasoglou, P. P., Brissimis, S. N., & Delis, M. D. (2008). Bank-specific, industry-specific and macroeconomic determinants of bank profitability. *Journal of International Financial Markets, Institutions and Money*, 18(2), 121-136.
- Babbie, E. R. (2010). *The practice of social research*. 12th ed. Belmont, CA: Wadsworth Cengage.
- Bank of Ghana (2017). Notice to co-operative credit unions, co-operative financial institutions and the general public. Retrieved from [www.bog.gov.gh](http://www.bog.gov.gh).
- Boadu, G. (2015). Assessing the efficiency and productivity of co-operative unions in Ghana: a Meta frontier approach. *Journal of Banking and Finance*, 20(4), 655-672.
- Boateng, A., Asongu, S. A., Akamavi, R., & Tchamyou, V. S. (2018). Information asymmetry and market power in the African banking industry. *Journal of Multinational Financial Management*. doi:10.1016/j.mulfin.2017.11.002.
- Bower, B., & Schink, M. (1994). Banking efficiency in South-East Europe: Evidence for financial crises and the gap between new EU members and candidate countries. *Economic Systems*, 41(1), 122-138.
- Capraru, B., & Ihnatov, I. (2014). Determinants of banks' profitability: Evidence from EU 27 banking systems. *Procedia Economics and Finance*, 20, 518-524.
- Crane, T. (2016). Efficiency, customer service and financial performance among Australian financial institutions. *International Journal of Bank Marketing*, 22(5), 319-342.

Credit Union Association (2017). Annual Report

Credit Union Association (2017). Report on CUA Special Meeting held at the University of Cape Coast.

Credit Union Association (2019). Annual Report

Credit Union Association (2020). Annual Report

Darko, A. (2007). Commercialisation and efficiency of microfinance institutions in Sub Saharan Africa. *Socio-Economic Planning Sciences*, 5(3), 1–33.

Dietrich, A., & Wanzenried, G. (2014). The determinants of commercial banking profitability in low-, middle-, and high-income countries. *Quarterly Review of Economics and Finance*, 54(3), 337-354.

Elton, F., Gruber, F., & Mei, N. (1994). The determinants of cost efficiency in cooperative financial institutions: Australian evidence. *Journal of Banking and Finance*, 2(5), 941-964.

Fatihudin, D. & Mochklas, M. (2018). How measuring financial performance. *International Journal of Civil Engineering and Technology*, 9(6), 553-557.

Goddard, J., Molyneux, P. & Wilson, J. O. S. (2004). The profitability of European Banks: a cross-sectional and dynamic panel analysis. *The Manchester School*, 72(3), 363-381.

Huberman, D. & Wang, T. (2005). Performance measurement of Taiwan commercial banks. *International Journal of Productivity and Performance Management*. 53(5), 425-434.

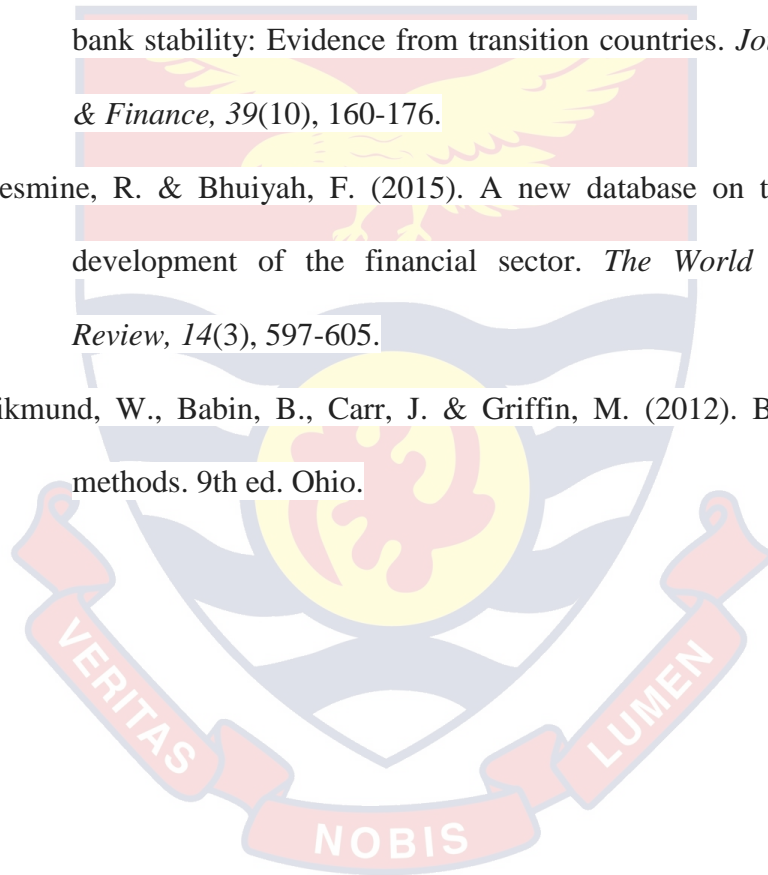
- Lee, C. C., & Hsieh, M. F. (2013). The impact of bank capital on profitability and risk in Asian banking. *Journal of International Money and Finance*, 32(1), 251-281.
- Lee, J. Y., & Kim, D. (2013). Bank performance and its determinants in Korea. *Japan and the World Economy*, 27, 83-94.
- Mantey, A. M. (2016). The Determinants of bank efficiency and productivity growth in the Ghanaian banking systems. *Eastern European Economics*, 49(6), 38-59.
- Menicucci, E., & Paolucci, G. (2016). The determinants of bank profitability: empirical evidence from the European banking sector. *Journal of Financial Reporting and Accounting*, 14(1), 86-115.
- Mohammed, A. (2015). Prospects and challenges of credit union operations in Ghana: a case study of selected credit unions in the Techiman municipality. *International Review of Financial Analysis*, 4(7), 154-165.
- Mujis, D. (2010). *Doing quantitative research in education using SPSS*, 2<sup>nd</sup> edition.
- Mwinyorbu, R. (2018). A new database on the structure and development of the financial sector. *The World Bank Economic Review*, 14(3), 597-605.
- Nadia, F. J. (2016). Bank-specific, industry-specific and macroeconomic determinants of bank profitability. *Working paper, Bank of Greece*. 1(1), 3-4.

- Njeri, B. (2016). Convergence of bank efficiency in emerging markets: The experience of Central and Eastern European countries. *Emerging Markets Finance and Trade*, 50(4), 9-30.
- Ongore, V. O. (2013). Determinants of financial performance of commercial banks in Kenya. *International Journal of Economics and Financial Issues*, 3(1), 237-252.
- Oyetayo, K. & Wang. C. (2005). Economic efficiency of commercial vegetable production system in Akwalbom State, Nigeria: A translog stochastic frontier cost function approach. *Tropical and Subtropical Agroecosystems*, 8(3), 313-318.
- Pasiouras, F., & Kosmidou, K. (2007). Factors influencing the profitability of domestic and foreign commercial banks in the European Union. *Research in International Business and Finance*, 21(2), 222-237.
- Petria, N., Capraru, B., & Ihnatov, I. (2015). Determinants of banks' profitability: Evidence from EU 27 banking systems. *Procedia Economics and Finance*, 20, 518-524.
- Ramji, G. (2018). Determinants of financial performance: An evidence from Nepalese commercial banks. *Amity Journal of Strategic Management*, 1(2), 7-13.
- Rashid, A., & Jabeen, S. (2016). Analyzing performance determinants: Conventional versus Islamic banks in Pakistan. *Borsa Istanbul Review*, 16(2), 92-107.
- Roger, A., Ali, C., & Bojan, G. (2018). Determinants of financial performance of banks in Central and Eastern Europe. *Business and Economic Horizons*, 14(3), 513-529.



- Roodman, D. (2009a). A note on the theme of too many instruments. *Oxford Bulletin of Economics and Statistics*, 71, 135–158.
- Roodman, D. (2009b). How to do xtabond2: An introduction to difference and system GMM in Stata. *Stata Journal*, 9, 86–136.
- Sangmi, M., Nazir, N. (2010). Analyzing financial performance of commercial banks in India: application of CAMEL Model. *Pakistan Journal of Commercial Social Sciences*, 3(4), 23-34.
- Sanjay, D. & Swati, D. (2015). Diversification: Literature Review and issues. *Strategy and Change*, 2(4), 569–588.
- Sarfo, D. (2018). Technical efficiency of credit unions in Ghana. *Journal of Finance and Economics*, 4(3), 88-96.
- Sey, C. (2017). An examination of banks' cost efficiency in Central and Eastern Europe. *Procedia Economics and Finance*, 2(2), 544-551.
- Singh, K. (2006). Institutional development and bank stability: Evidence from transition countries. *Journal of Banking & Finance*, 39(10), 160-176.
- Stiroh, K. J. (2000). How did bank holding companies prosper in the 1990s? *Journal of Banking & Finance*, 24(11), 1703-1745.
- Sufian, F. (2012). Determinants of bank profitability in developing economies: Empirical evidence from the South Asian banking sectors. *Contemporary South Asia*, 20(3), 375-399.
- Sufian, F., & Noor, M. A. N. M. (2012). Determinants of bank performance in a developing economy: Does bank origins matters? *Global Business Review*, 13(1), 1-23.

- Tailab, F. (2014). Performance measurement of Taiwan commercial banks. *International Journal of Product, Performance and Management*, 53(5), 425-434.
- Turner, B. (2000). On the determinants of profitability of Indian life insurers: An empirical Study. *Proceedings of the World Congress on Engineering*, 1(3), 4-6.
- Tuyishime, K., Memba, G., & Mbera, S. (2015). Institutional development and bank stability: Evidence from transition countries. *Journal of Banking & Finance*, 39(10), 160-176.
- Yesmine, R. & Bhuiyah, F. (2015). A new database on the structure and development of the financial sector. *The World Bank Economic Review*, 14(3), 597-605.
- Zikmund, W., Babin, B., Carr, J. & Griffin, M. (2012). Business research methods. 9th ed. Ohio.



## APPENDIX

**Table 7: List of Co-operative Credit Unions in Ghana**

No.	Name	Type	Year
1.	A. E. S. District Teachers	Workplace	1998
2.	Abura-Asebu-Kwamankese	Workplace	1992
3.	Agona Nsaba Community CUA	Community	2006
4.	Adjumako E. E. Teachers	Workplace	1998
5.	Adjumako Workers	Workplace	2005
6.	Apam Workers	Workplace	1994
7.	Asikuma Odoben Brakwa Teachers	Workplace	1997
8.	ASSI	Community	2005
9.	Assin District Teachers	Workplace	1996
10.	Assin Fosu Community	Community	2007
11.	Bisease Cath Parish	Parish	2006
12.	Cape Coast Meth. Dioc	Parish	1998
13.	Cape Coast Monument Board	Workplace	1973
14.	Dunkwa Area Teachers	Workplace	1975
15.	Dunkwa Traders	Community	1999
16.	ECG Cape Coast	Workplace	-
17.	Gomoa Kokofu	Community	2006
18.	Gomoa Teachers	Workplace	1996
19.	ILO Edwumapa	Community	2006
20.	IRS (Cape Coast)	Workplace	1996
21.	K. E. E. A. Dist Teachers	Workplace	1992
22.	K. E. E. A. Workers	Workplace	1993
23.	Mankesim Ebenezer Methodist	Parish	2003
24.	Mfantseman District Teachers	Workplace	1996
25.	Mustard Seed	Community	2006
26.	Oguaa Teachers	Workplace	1974
27.	Progressive Women	Community	1993
28.	Self-Empowerment	Community	1999
29.	Swedru Methodist	Parish	1989
30.	Swedru Teachers	Workplace	1970
31.	T. H. L. D. Teachers	Workplace	1992
32.	Top Employees	Workplace	2003
33.	Twifuman Community	Community	2000
34.	U. E. W.	Workplace	1995
35.	University of Cape Coast	Workplace	1992
36.	Workers-Assin Fosu	Workplace	1996

Source: Credit Union Association of Ghana (2020)