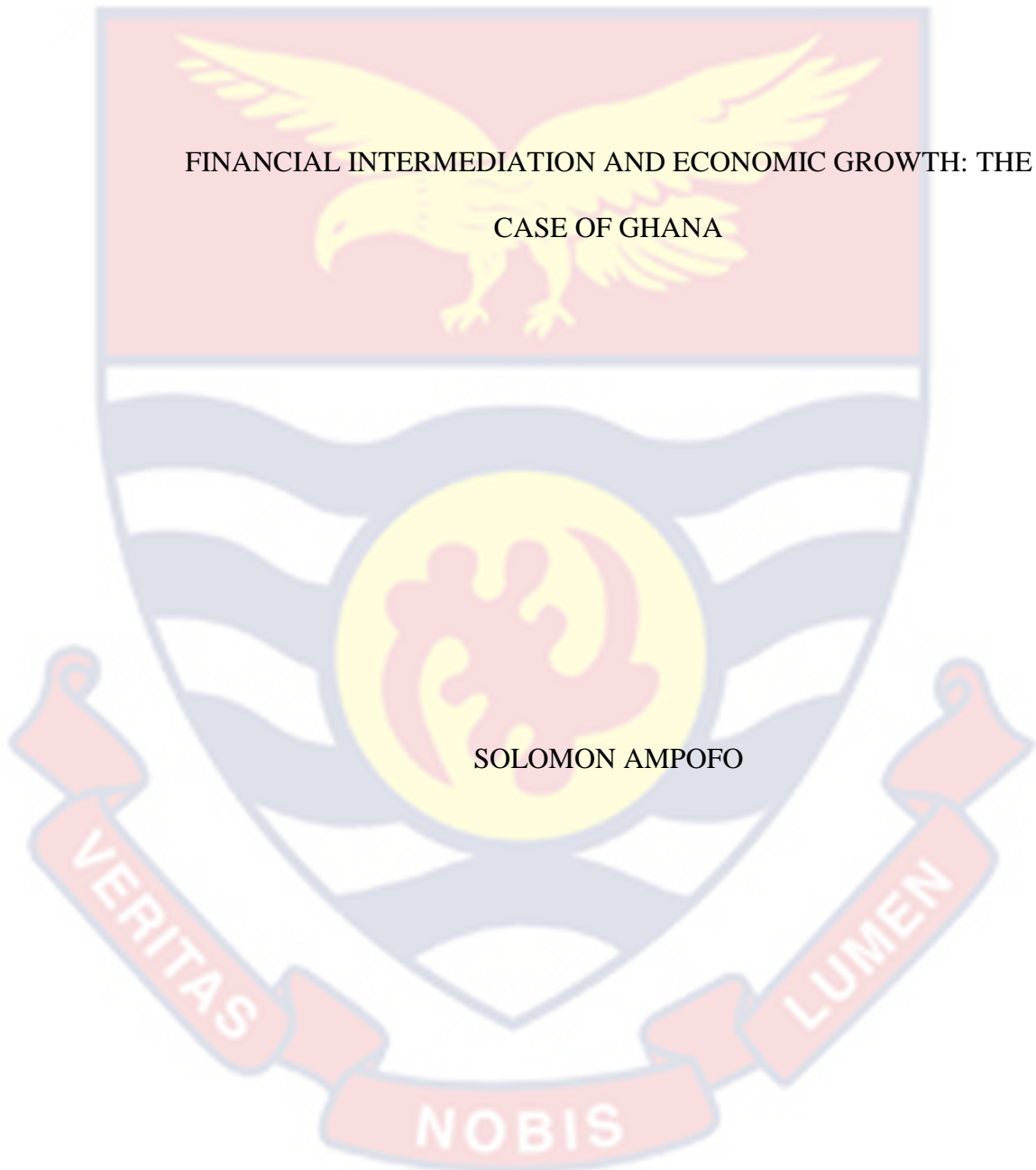


UNIVERSITY OF CAPE COAST



FINANCIAL INTERMEDIATION AND ECONOMIC GROWTH: THE
CASE OF GHANA

SOLOMON AMPOFO

2023

UNIVERSITY OF CAPE COAST



FINANCIAL INTERMEDIATION AND ECONOMIC GROWTH: THE
CASE OF GHANA

BY

SOLOMON AMPOFO

Dissertation submitted to the Department of Accounting of the School of
Business, College of Humanities and Legal Studies, University of Cape Coast,
in partial fulfilment of the requirements for the award of Master of Business
Administration degree in Finance

APRIL 2023

DECLARATION

Candidate's Declaration

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

Candidate's Signature..... Date.....

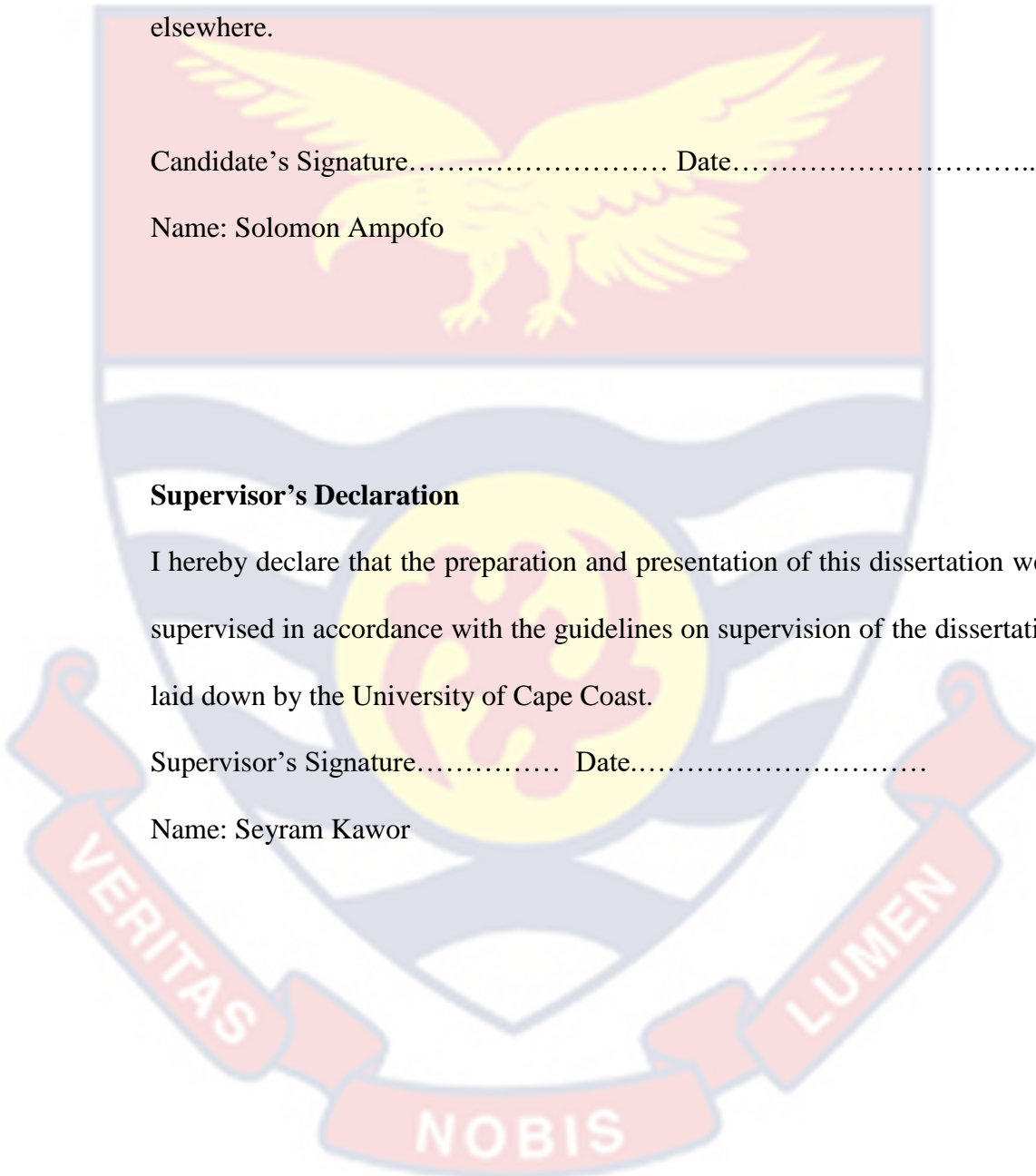
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Supervisor's Declaration

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

Supervisor's Signature..... Date.....

Name: Seyram Kawor



ABSTRACT

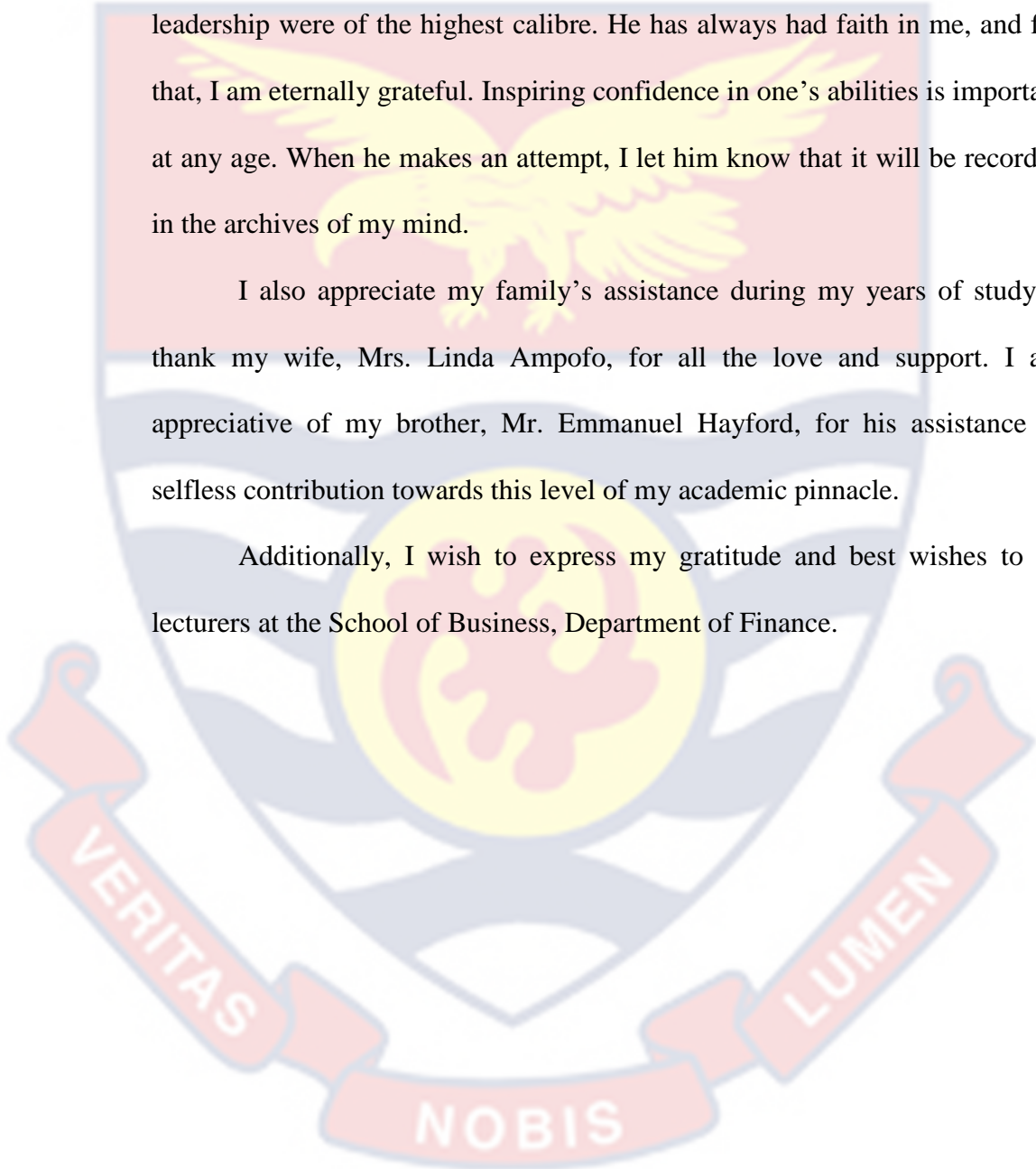
Ghana's financial sector has undergone several reforms due to regulatory non-compliance and poor supervision, which led to the cleanup of many unprofitable banks in 2018. Directives from the Bank of Ghana (BOG) to the commercial banks to keep high reserves ratio and maintain interest rate ceilings may negatively affect the competitiveness of the financial sector. A quantitative research approach embedded with Explanatory Sequential Survey Design was employed. Financial institutions in Ghana and uniform distribution of bank outlets across its population were used. The study used the census sampling method to select all the twenty-three commercial banks in Ghana that survived the minimum capital requirement increment. Bank assets, credit administration, and financial transactions through e-banking services were used to measure the impact of financial intermediation on economic growth. It was established that a significant positive relationship exists between financial intermediation and economic growth in Ghana. Bank asset to GDP has a positive relationship with economic growth. There was a positive relationship between economic growth, which was proxied by per capita income and bank assets. It was recommended that there should be a policy and educational campaigns by the government and Bank of Ghana through the National Council for Civic Education that will promote financial intermediation by ensuring more financial inclusion among those in the informal sector and the rural areas.

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I also appreciate my family's assistance during my years of study. I thank my wife, Mrs. Linda Ampofo, for all the love and support. I am appreciative of my brother, Mr. Emmanuel Hayford, for his assistance of selfless contribution towards this level of my academic pinnacle.

Additionally, I wish to express my gratitude and best wishes to all lecturers at the School of Business, Department of Finance.



DEDICATION

To my family.



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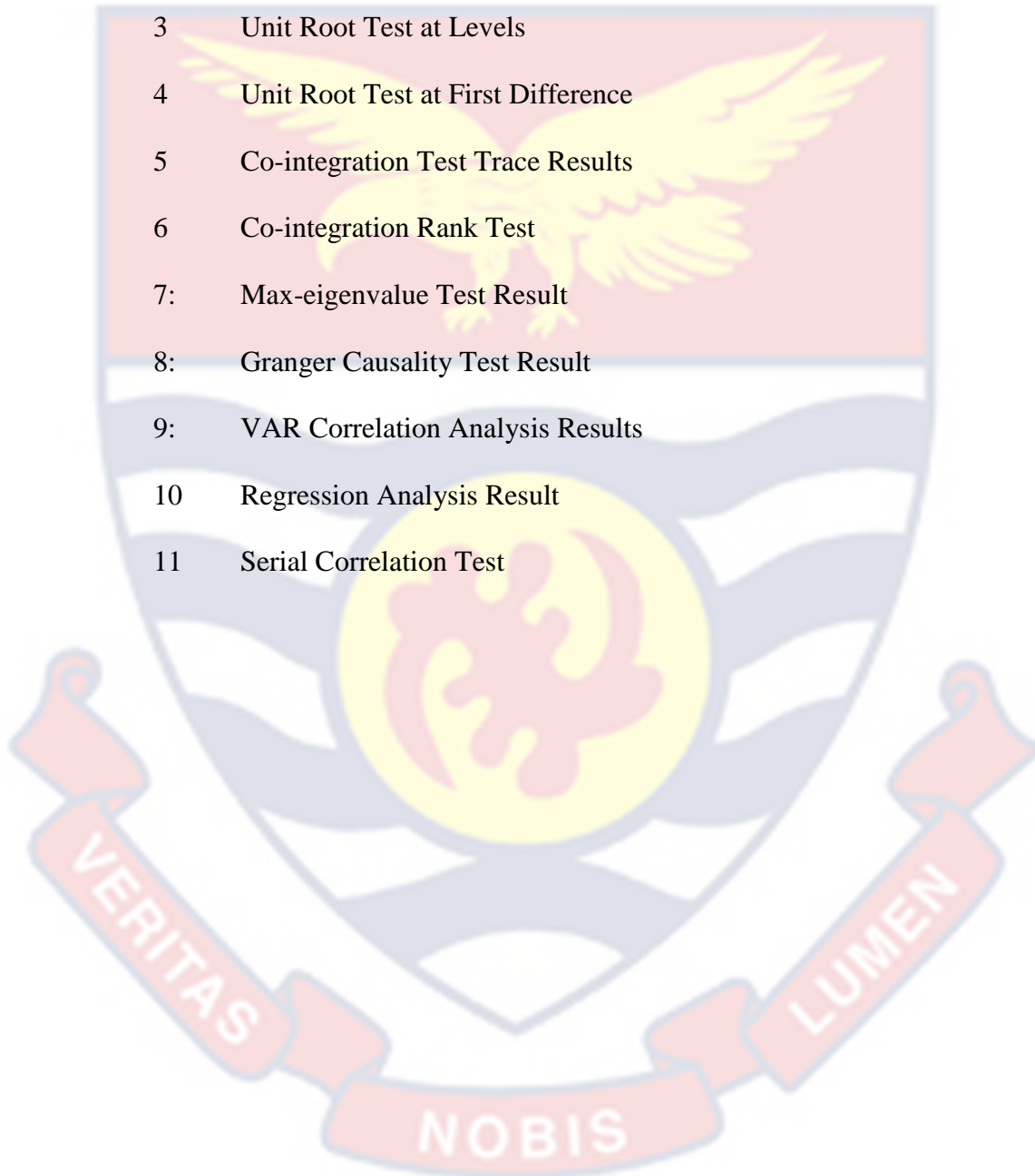
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CHAPTER ONE

INTRODUCTION

This study examines how financial intermediation influences economic growth in Ghana and what is required to facilitate economic growth. The study was organized into Background of the Study, Statement of the Problem, Purpose of the Study, Research Questions and Hypotheses, Significance of the Study, Operational definitions and Organisation of the Study.

Background to the Study

The importance of financial intermediaries in alleviating poverty, boosting economic growth, and fostering sustainable development is widely acknowledged around the globe (World Bank 2018). The World Bank and the International Monetary Fund have come to recognise that inclusive financial institutions help the poor save and borrow money to invest in business opportunities and help the poor insure themselves against socioeconomic risks. Mobile phone technology, in particular, has allowed the delivery of affordable and trustworthy financial services to the world's poor (Ledgerwood, Earne & Nelson, 2013). As a result, distance or access and transaction issues have been alleviated in many African countries, dramatically increasing mobile phone use. This means that the ability of a nation's financial sector to facilitate growth is crucial (Demirgüç-Kunt, Klapper, Singer, Ansar & Hess, 2020). As a proven strategy for promoting economic development, financial intermediation is crucial in transforming savings into investments (Bonful, 2019). Because of this, in the modern, cutthroat financial markets, every financial institution aims for maximum profits. If a country's financial industry is successful, it will be resilient enough to weather adverse shocks

from the outside world, and its overall financial system will be more stable (World Bank, 2018).

In Ghana, banks' immediate response to the Covid-19 virus shock was to help private businesses adversely impacted by the lack of economic activity during the partial lockdown imposed on Accra and Kumasi from March 30-April 20 to limit the spread of the virus (Andani, 2020). Providing timely prudential guidelines can help ensure that affected borrowers and industries receive well-designed public and private support initiatives. Commercial banks in Ghana have already taken several steps to aid companies and people impacted by the pandemic, including offering government-funded loans, public guarantee schemes, and temporary payment moratoria. At the same time, banks collaborated with distressed borrowers to restructure loans for businesses and individuals hit hard by the crisis. The financial authorities urged the banks to restructure the debts wisely and keep the credit flowing (Khor, 2008; Maliszewski et al., 2016).

In this regard, regulators must clarify how these forms of support should be accounted for within the prudential framework. Commercial banks have also set aside GH¢ three billion to lend to businesses severely affected by the shock, especially those in the hospitality sector. To be trustworthy and effective, a financial system must accomplish three things: generate a sizable profit, provide excellent service to its clients, and keep a healthy supply of capital available for lending (Bonful, 2019). However, the issue is how many financial institutions are required in a particular country at any point in time to implement its financial agenda without fail. In Ghana, a recent clean-up exercise in the financial sector suggests that there are too many banks in the

country, which calls for an investigation to confirm or deny it (Obuobi, Nketiah, Awuah & Amadi, 2019).

Statement of the Problem

Ghana's financial sector has undergone several reforms due to regulatory non-compliance and poor supervision, leading to many unprofitable banks' cleanup in 2018. In addition, credit deliveries were not properly monitored or measured because of poor corporate governance, a lack of acceptable risk management methods to decrease credit risks, and an absence of effective monitoring and measurement mechanisms (Quartey, Turkson, Abor, & Iddrisu, 2017). In addition, the influx of many poorly managed and mushroom financial institutions put the depositors' financial security at risk and made people wonder whether Ghana had more financial institutions than required. The quick spread of public and private commercial bank branches in many communities created employment opportunities, but how suppliers of funds were managed left many questions to be answered. Also at fault were regulatory breaches made by the Bank of Ghana (BoG), the country's central bank and primary banking regulator (Agyei, 2018). Bank of Ghana (2016) blamed the banking failures on lax adherence to regulations and insufficient oversight in a news release. Questionable licensing processes and weak enforcement of operating standards led to a significant build-up of vulnerabilities in the banking sector, resulting in banking clean-up exercises (Bonful, 2019). The issue is that we could have to find alternative means to maintain these banks, considering the enormous benefits that banks offer to this country.

According to Nwekemezie and John (2019), economic theory has established that efficient financial intermediation is the source of economic growth, which helps generate more employment, increases gross domestic product, and improves income levels, respectively. Also, through efficient financial intermediation, individual and institutional investors can gain higher returns on investment and improve their living standards. According to Bonful (2019), financial intermediation usually influences economic growth. Financial intermediation is driven by the surge in savings, which influences gross capital formation, which eventually affects economic growth. However, Ngumi (2013) study suggested that financial intermediation can sometimes slow down economic growth. This happens when the financial intermediation system encounters sluggish growth due to constraints imposed by financial regulators. For example, directives from the Bank of Ghana (BoG) to the commercial banks to keep high reserves ratio and maintain interest rate ceilings may negatively affect the competitiveness of the financial sector. These arguments have recently generated much hot debate, drawing significant research attention.

Nevertheless, the relationship between financial intermediation and economic growth also remains unresolved. While some studies, such as Morakinyo and Sibanda (2016). Ncanywa, and Makhenyane (2016), have established that financial intermediation has a positive relationship with economic growth, other research evidence, such as Luan and Bauer (2016), Martynova (2015), and Mawutor (2014), suggested that there is a negative relationship. Anecdotal evidence from the researcher also indicates that there is a dearth of studies relating to financial intermediation and economic growth

in Ghana; it was against this gap identified in the literature that the study employed a sequential explanatory design embedded with a quantitative research approach to examine the financial intermediation and economic growth in Ghana.

Purpose of the Study

The general purpose of this study is to investigate how financial intermediation affects economic growth in Ghana.

Research Objectives

Specifically, this study is set out to achieve the following objectives:

1. Analyse how the e-banking financial system affects economic growth.
2. Examine how bank lending to the private sector among commercial banks influences economic growth
3. Ascertain how banks' asset-to-GDP ratio among commercial banks influences economic growth

Research Questions

To achieve the above specific research objectives, the following questions were posed for an investigation

1. What is the effect of the e-banking financial system on economic growth?
2. How does bank lending to the private sector among commercial banks influence economic growth?
3. How does the financial deposits to GDP ratio among commercial banks influence economic growth?

Research Hypotheses

$H_1: p \neq 0$: The e-banking financial system has no effect on the economic growth of Ghana.

$H_2: p \neq 0$: Bank credit to the private sector among commercial banks has no influence on economic growth.

$H_3: p \neq 0$: Bank asset to GDP ratio among commercial banks has no influence on economic growth.

Significance of the Study

The outcome of this study will be beneficial for contributing to the relationship between financial intermediation and economic growth in Ghana. The outcome will also assist policymakers in knowing how mobile money transactions, lending rates, and financial institution assets influence. It would contribute to narrowing the gap in financial intermediation research in Ghana by introducing new variables as proxies that reflect the current socio-economic circumstances of Ghana due to technological advancement in the financial sector. It will also serve as an academic reference for students and researchers.

Limitations of the Study

This study is restricted to the Ghanaian economy, and the data for the analysis covers years from 2007 to 2021. Since this is a study of Ghana, we collected annual time series data on the country's financial health from the Bank of Ghana's Financial Soundness Indicators during the time mentioned above. The study's heavy dependence on information from the Bank of Ghana is a weakness. This means that only to the extent to which the data are trustworthy and authentic can the findings and conclusions be considered valid. The economy of Ghana was also a focus of the study. Since the country

has distinct features, qualities, and laws that have ramifications for economic and financial policies, the outcomes achieved there cannot be directly generalised to any other country.

Operational Definition of Terms

E-banking (electronic banking or online banking) is a financial service that allows customers to perform financial transactions through the internet or other electronic channels. This can include checking account balances, transferring funds between accounts, paying bills, applying for loans or credit cards, and more.

Economic growth refers to an increase in the total output of goods and services produced by an economy over a certain period, typically measured by gross domestic product (GDP) or gross national product (GNP). It is usually expressed as a percentage increase in real GDP over a given period, such as a year or a quarter.

Financial intermediation refers to the process by which financial institutions such as banks, credit unions, insurance companies, and investment firms act as middlemen between savers and borrowers in the financial system.

Organisation of the Study

The study was conducted in five chapters. Chapter one dealt with the introduction, background to the study, statement of the problem, the purpose of the study, research questions and hypotheses, the significance of the study, delimitations, and limitations. The second chapter examined the theoretical framework and conceptual and literature review, highlighting research and other writers' perspectives. Chapter three covered the research methods, including design, population, sampling processes, data collection instrument,

pre-testing, validity and reliability of the research instruments, data collection procedures, data processing and analysis, and ethical considerations. In chapter four, the results were presented, and the outcomes were examined. Chapter five focused on the study summary, major findings of the study results, conclusions, recommendations, and suggestions for inquiry.



CHAPTER TWO

LITERATURE REVIEW

Introduction

This chapter reviews the relevant previous studies on similar topics. The study investigated how financial intermediation affects economic growth in Ghana. It continues with a review of relevant theories on financial intermediation and follows up with a review of concepts that align with this study. There was an empirical review of previous authors who have conducted similar studies and the main points are outlined in this chapter.

Theoretical Framework

The main theoretical thinking underpinning this study is the finance–growth nexus theory, credit creation theory, and debt intermediation theories. These theories will be discussed in detail, and their implication, criticisms, and relevance to this research work will be carefully examined. The proponents of these theories and what other previous authors have said about this theory will be examined.

The Finance–Growth Nexus Theory

Bagehot, in the 1870s, is considered the progenitor of the finance–growth nexus idea. This hypothesis explains the relationship between banking systems and genuine economic expansion. Like water finding its level, the theory postulated that investment dollars would flow without hesitation or doubt to where they would be most profitable (Leon & Zins, 2020).

In the early 1930s, Schumpeter developed this idea further by arguing that financial institutions like banks serve as a bridge between the pioneers of new ideas and the people who hold the capital that supports them. Therefore,

the new combination of “novel ideas” may be implemented after the bank grants loans, resulting in increased economic growth and societal gain. Continuing his investigation, he outlined how important bank loans are for start-up costs when launching innovative enterprises (Tabash, 2018). After an enterprise has reached a certain “steady state” in its development, the profits it earns from its operations may be sufficient to fund the purchase of a new business entity. Financing is secondary at this point. Therefore, it can be argued that finance facilitates economic development, at least in the infant (early) stages of economic growth. The implication of this theory to this study is that more financial institutions are likely to offer more credits to individuals with innovative ideas, which will lead to the creation of new business ventures.

Credit Creation Theory

Credit is created when the banks lend a certain percentage of the depositors’ funds to borrowers at a higher interest rate than it pays to depositors. The difference between the total borrowing cost charged to borrowers and net returns on lending is termed the intermediary cost. According to Kiprop, Kalio, Kibet and Kiprop (2015), the intermediary cost arising from credit creation comprises credit administrative, information, transaction, default, and operational costs. Credit creation is associated with default risk that must be carefully managed. Risk-averse banks usually charge higher interest rates and operate with a smaller risk spread than risk-neutral banks.

In Ghana, the interest rate spread has been relatively high, which limits access to loans and undermines the credit creation capacities of the banks. The

implication of this theory to this study is that the credit creation process influences the intermediary role of banks by either increasing the banks' profitability or increasing the banks' losses which eventually affect the country's economic growth. According to International Monetary Fund (2016), factors that influence banks' credit creation abilities are uncertainties in the economy, low levels of savings, inefficiency in the domestic banking system, low supply of loans, and lack of competition. This shows a link between economic growth and the credit creation abilities of banks.

Debt Intermediation Theory

This traditional theory establishes a relationship between transactional cost and information asymmetry. Based on this hypothesis, both the lender and the borrower benefit from a favourable return on investment (ROI) when they make a good loan to one another (Unvan & Yakubu, 2020). In other words, if a bank successfully matches depositors with entrepreneurs, both parties benefit financially. According to the notion, the bank's loan portfolios risk severe losses if the borrower's speculative play with the money goes south. However, bank depositors risk losing money if banks default on loss-making loans. The skill of identifying potential successful entrepreneurs who can take enough market share over competitors or develop a new market is one of the essential bases of this theory.

According to the findings of this research, the hypothesis suggests that financial institutions should share data on bad debt. This will aid in the identification of potentially dangerous borrowers, which will ultimately help to lower credit risk. This idea established a link between low-cost efficiency and a rise in future non-performing loans. It also establishes a connection

between this phenomenon and incompetent debt management, as evidenced by subpar abilities in credit assessment, collateral valuation, and borrower oversight.

Conceptual Framework

Similar studies have proved that financial intermediation has improved many countries' individual, business, and household lives and living standards. Financial institutions can contribute directly to individual welfare by allowing people to build wealth in the face of economic shocks and relax in the absence of such shocks, as Mawutor (2014) argued. As a result, families are better prepared to take calculated risks that will ultimately increase their wages. Indirectly, banks help people get the things they need, like credit, but also things like medical care and higher education. It is conceivable, for instance, because of the services provided by financial institutions that transfer risks in order to facilitate business and commerce. The insurance market allows business owners to potentially increase their chances of survival by removing the financial burden of an unfortunate event from their shoulders. Insurance in place to protect against losses incurred due to international trade helps boost exports and imports making it easier for foreign investors to gain access to domestic financial markets (World Bank, 2016).

This allows businesses to take advantage of the resources developed by banking and insurance firms to construct risk management plans and countermeasures. In addition, insurers may demand such plans and strategies be implemented before agreeing to cover particular risks, incentivising firms to alter their behaviour and adopt better risk management techniques. You must go to a financial institution to get a loan or line of credit. Lending,

mortgages, project financing, and leasing are only some of the services that rely on the stability of financial institutions. When lending money, insurance is a type of financial institution that lowers the likelihood of default by borrowers or offers alternatives to collateral to lower lender risk so that more credit can be extended on more favourable terms (World Bank, 2018). Credit providers' ability to lend on commercially viable terms may be bolstered by the expertise of insurance markets in pricing risk and the availability of insurance market tools for identifying and mitigating exposures. The assistance of financial institutions bolsters the growth of capital markets. The financial sector's ability to collect premiums and invest pension funds efficiently can contribute to capital markets' growth-supporting depth and efficiency. Additionally, it can facilitate business investment, mobilizing funds (Ghana Banking Survey, 2019).

Capital pooling agents help businesses save money and spread their risks. Insurance companies can amass sizable investment capital by pooling the savings of many individual investors. The management and investment of larger funds are more cost-effective, and the resulting portfolio diversification is more secure. Institutions of finance likewise direct funds to enterprises that promise greater returns on investment. By investing over longer time horizons, accumulating professional skills and data to manage assets and identify investment opportunities, transacting at scale to increase efficiency, and reducing the unproductive capital that investors need to hold as a precautionary measure for potential risks, insurers can allocate capital to productive opportunities more effectively than individual investors. Establishing reliable governance structures and fostering trust among investors

are two primary goals of the financial sector (Ouma, Odongo & Were, 2017). Among the institutional investors are insurers, who play a pivotal role in fostering and enforcing governance, auditing, and accounting standards reforms, all of which contribute to developing the professional investment industry. Building such institutions is essential for domestic and international business confidence, which drives investment and spurs economic expansion (Ghana Banking Survey, 2019). The number of financial institutions and their roles towards economic development can be summarised in Figure 1:

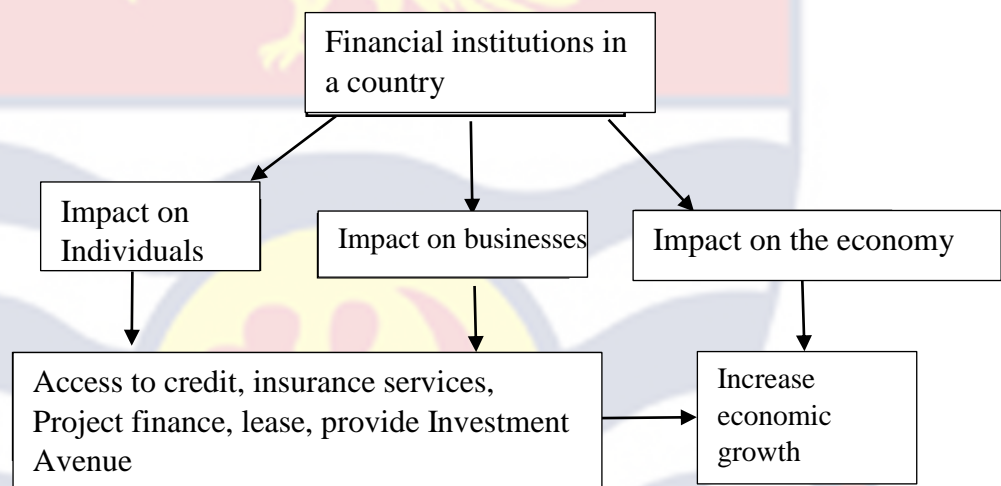


Figure 1: The number of financial institutions and their roles towards economic development.

Source: Author's construct (2022).

Figure 1 shows that financial institutions within which financial intermediation occurs affect individual households, Business entities, and the entire economy. How financial intermediation affects these units and the economy as a whole is discussed below:

Conceptual Review

The state of the banking industry in Ghana

For reasons of insolvency, the Bank of Ghana (2017) issued a press release announcing its approval of GCB Bank LTD's (a foreign bank) takeover of UT Bank LTD and Capital Bank LTD (two local banks). Managers for various banks reportedly failed to meet minimum capital requirements despite agreeing to do so in writing with BOG (2017). As a result, the banks' banking licences were cancelled so that GCB could acquire them to safeguard their consumers' interests. Once again, on August 1, 2018, the Bank of Ghana issued a press release announcing the merger of five local banks into a single institution they call the Consolidated Bank Limited. Unibank Ghana Ltd, The Royal Bank Ltd, The Beige Bank Ltd, The Sovereign Bank Ltd, and Construction Bank Ltd were the five banks that failed. For all the banks' failures, insolvency was the reason (Ghana Banking Survey, 2019). About seven homegrown banks failed within two years.

Bank of Ghana and other financial analysts have also pointed to poor corporate governance as a crucial factor in the failure of the seven banks. The top executives were either not doing anything to further the bank's growth or were actively working against it. For instance, it has been noted that most of the bad loans went to relatives of high-ranking board members.

In addition, either through incompetence or avarice, bank boards have failed to adequately monitor the effectiveness of their institutions' accounting, corporate reporting, and external auditing processes. The Board of Directors also did not implement an adequate risk management system (Ghana Banking Survey, 2019). Most of the failed financial institutions had Chief Internal

Auditors who lacked independence and integrity, which allowed executive directors to conceal wrongdoing in review processes. The failure of these financial institutions is largely attributable to widespread violations of corporate governance policies. The failure of some banks is also attributable to non-performing loans. Bank of Ghana (2016) reports that the continued high levels of non-performing loans held by banks and the non-performing loans ratio continue to be key issues for the quality of the banking sector's assets. One way in which banks are impacted by NPLs is through a rise in operational costs that ultimately reduces profits. This may have negative monetary effects on banks by reducing their capital, which could eventually lead to undercapitalisation (Quartey, Turkson, Abor & Iddrisu, 2017). Local banks were accused of being too in cahoots to provide risky loans to customers who could not recoup their losses or enforce proper procedures. In addition, poor corporate governance meant a lack of effective risk management measures, such as proper monitoring and measurement mechanisms, for lowering credit risks (Tursoy & Faisal, 2018).

Financial intermediation and its impact on Individuals' development

Financial intermediation (FI) impacts people's aspirations and ambitions positively and negatively. People can borrow and invest in profitable ventures through FI for a better future. According to Hardle and Simar (2015), Financial intermediation serves as a means through which investment opportunities are created for individual citizens of the country. Gross, Kok, and Zochowski (2016) also stated that financial institutions play their intermediary role efficiently when they can help borrowers of funds more carefully, so it is generally accepted that banks, as financial intermediaries,

have more access to important information than an individual investor, who may not have access to such information, and so may make better investment decisions as a result. Financial institutions benefit from this information asymmetry advantage because of their pivotal function as economic intermediaries.

Impact of Financial Intermediation on Businesses growth

Ghana Banking Survey (2019) explained that through the financial intermediation business, investors could purchase financial assets from banks willing to offer attractive interest rates. Also, business entrepreneurs who otherwise lack the capital to finance their business transactions and projects can get funds through organised financial intermediation by the banks. Businesses encounter many challenges, and one such is Credit Constrained. This arises when the business finds obtaining Overdraft facilities and Credit lines difficult. The concept of Credit Constrained Status was developed by Kuntchev, Ramalho, Rodriguez-Meza and Yang (2013), who used Enterprise data set to construct four different types of estimating how credit-constrained firms are classified. They categorised firms into groups such as Full Credit Constrained (FCC), Partially Credit Constrained (PCC), Maybe Credit Constrained (MCC), and No Credit Constrained (NCC). According to Kuntchev et al. (2013), for a firm to be categorised as Full Credit Constrained, it must have been established that it has applied for a loan and has been denied with no other source of external finance. They must also fall under the following criteria:

- a. The firm did not use external finance to finance its working capital and investments the previous year.

- b. The firm does not have any outstanding loan that was disbursed during the previous fiscal year or any period after as at the time the questionnaire is being completed
- c. Applied for a loan during the previous year.
- d. Firms that fall under the PCC category were able to obtain other sources of external finance.

Economic growth and financial intermediation

The financial intermediation concept suggests that economies with efficient banks that have established connections between suppliers of funds and demanders of funds can promote economic growth.

According to Frimpong (2013), the intermediary financial interactions promote overall economic growth when financial institutions can allocate funds efficiently within an economy and offer opportunities for the needy class. Estrada, Park, and Ramayandi (2015) contend that economic growth is enhanced when an economy has a vibrant financial sector. Fidrmuc, Fungacova, and Weill (2015) also explained that financial institutions such as banks support an economic ecosystem to grow by providing highly efficient markets for the supply of funds (Domeher, Frempong, and Appiah, 2014).

In addition, stress the importance of financial intermediation in enhancing banks' already positive role in contributing to economic growth. Therefore, according to proponents of the supply push model, financial markets develop in response to an increased demand for the provision of financial amenities from an expanding economy. As seen in other parts of the economy, financial market growth only reflects broader trends.

The digitised financial system and economic growth of Ghana

In Ghana, the Bank of Ghana has made an effort to make basic financial services available, affordable, and readily accessible to all Ghanaians. It is believed that is one of the many ways to assist the rural and unbanked population to overcome poverty. A study by Demirguc-Kunt (2015) indicated that about 2 billion adult population are unbanked in the world, and out of these, more than 30% are in Africa's rural areas. However, the introduction of mobile phone technology has changed rural and unbanked people's status in terms of access to financial services. The rural unbanked and under-banked masses now have the opportunity to be financially included through mobile phone technology. Rural communities now have the means of saving, receiving, and sending money through mobile phones. According to World Bank (2016), the use of mobile phones is relatively cheaper, secure, reliable, and easy for millions of people who do not have the opportunity to access the formal financial system (Danquah, Quartey, and Iddrisu 2017) explained that the Bank of Ghana had introduced EZWICH biometric bank card that can use an ATM. In addition, the Telecom industries such as MTN, Vodafone, and Airtel-Tigo have efficient financial services through mobile phones and SMS services. This study will use the value of mobile money transaction that has taken place over the years as financial intermediation and its relationship with economic growth.

Bank lending rates among commercial banks and their influence on economic growth

Several researchers, including Demirgüç-Kunt, Klapper, Singer, Ansar, and Hess (2018). A borrower's interest rate reflects the cost to the lender for accessing the bank's lending resources. Interest is a cost associated with borrowing or using someone else's property typically stated as a yearly percentage rate. The growth of a country's economy is sensitive to fluctuations in the market interest rate because of the impact commercial banks have on consumer and business lending and borrowing practices (Beck, 2015). For instance, the market clearing prices at which an investor is ready to purchase mortgage-backed securities are based on the interest rates banks offer to their customers. Since the lending rate of banks is typically greater than the deposit rate, higher interest rates are good for the profitability of banks, according to research by Babu (2015).

Financial deposits among commercial banks and its influence on economic growth

It might be challenging to gather savings from potential individual depositors for a bank. There are expenses related to mobilising savings, such as addressing the information asymmetry intended to increase depositor confidence. This allows depositors to give the banks power over their money. Additionally, Domeher, Frempong, and Appiah (2014) and Seng (2017) explained how dealing with the transaction costs associated with collecting savings from individuals via manual or digital means has an effect on economic growth and how mobilizers of savings must be able to persuade savers of the security of their investment in order for effective savings to

occur. In order for depositors to feel safe leaving their money to the banks as savings, banks need to build good strong reputations, according to Tabash and Dhankar (2014), Tabash (2018), and Seng (2017). This study aims to determine whether economic growth is significantly impacted when banks act as intermediaries and enable individuals to mobilise sufficient funds. The mobilisation of savings can result in capital accumulation, better resource allocation, and a boost to technological innovation, according to Allen, Demirgüç-Kunt, Klapper, and Peria (2016). Additionally, the development of small denomination instruments is necessary for ongoing mobilisation. These denominated securities allow households to build diversified investment portfolios Chen and Zhang (2015).

Trend analysis in financial intermediation

According to Aggrey (2017), financial intermediation is influenced by several factors related to the macroeconomic indicators in the financial sector. Some of these factors include the contribution of banks assets to gross domestic product (Bankasgdp), Capital adequacy ratio (CAR), Inflation (INFL), the value of mobile money transactions (MoMo), non-performing loans (NPL) and Real Interest rate (RIR). These factors also influence the economy of countries

worldwide, which is measured in this study as countries' per capita growth rate. These variables and their trends over time have been summarized in Table 1.

Table 1. Trends in Financial intermediation and economic growth

Year	Per capita growth rate	Bank Asset to GDP	Capital Adequacy Ratio	Inflation	MoMo	credit to private sector supplied % of GDP	Real Interest Rate
2007	6.50	9.68	15.70	12.80	16.55	14.42	10.56
2008	12.57	16.15	13.800	16.52	19.590	15.54	10.73
2009	11.23	16.63	18.200	19.25	62.829	14.58	13.50
2010	20.57	17.12	19.130	10.71	223.330	14.38	16.27
2011	19.25	17.60	17.410	8.73	547.960	14.74	19.04
2012	2.46	17.40	18.560	7.13	1257.400	12.06	21.81
2013	48.78	20.46	18.450	11.67	231.210	14.25	24.58
2014	-19.54	21.74	17.930	15.49	2633.930	15.23	27.35
2015	-10.22	22.62	17.810	17.15	2221.910	14.58	30.12
2016	12.19	22.52	18.100	17.45	2729.710	12.90	32.89
2017	5.60	21.22	15.600	12.37	2831.210	21.600	35.66
2018	8.59	22.77	19.270	11.81	3418.520	10.78	38.43
2019	0.73	24.45	19.120	11.20	3565.720	11.43	41.20
2020	5.35	25.75	19.830	10.30	3846.870	9.93	43.97

Source: From IMF and Bank of Ghana's Financial Soundness Indicators Database, 2022

Empirical Review

Effects of the e-banking financial system on economic growth

Evidence from Turkey, Yakubu, Abokor, and Balay (2020) re-examines the effect of financial intermediaries on GDP growth. Using annual data from 1970 to 2017, the authors of this study intended to examine the role that financial intermediation had in driving economic growth in Turkey. The authors used the Autoregressive Distributed Lag (ARDL) bounds testing to cointegration based on the results of the enhanced Dickey-Fuller and Phillips-Perron unit root tests for stationarity to determine the long-run impact of financial intermediation alongside other control factors on economic growth. This research also estimates the Error Correction Model to examine the short-

run connection between financial intermediation and economic growth (ECM). Financial intermediation has been found to substantially impact economic growth in the short and long terms.

The supply-leading hypothesis has some support, while the effect is positive only in the short run. When looking at the control variables, the authors note that while financial openness has a long-term positive significant effect on economic growth, gross fixed capital formation is only important in the short term. These findings suggest that inflation restrains economic expansion throughout all periods studied. A single variable always measures financial intermediation in the empirical investigation of the connection between financial intermediation and economic growth.

Due to the fact that a single proxy does not sufficiently describe financial intermediation activities, the authors claim that such research may be biased and yield misleading results. In a similar vein, these results may mislead policymakers. The authors use Principal Component Study (PCA) to create a composite index for financial intermediation based on three broad indicators, providing a more vivid and robust analysis. No studies have been found that use a composite index of financial intermediation to examine the relationship between financial intermediation and economic growth. This article addresses that gap in the literature.

Bonful (2019) looked into the availability of capital for construction businesses in Ghana. This research aimed to learn how easy it is for construction companies in Ghana to get loans and how that affects their productivity. Since it is common knowledge in the academic literature that access to financial services improves organisational effectiveness, we wanted

to see if our findings would change if we restricted our analysis to companies sharing similar traits rather than countries. The primary goal of this research is to gauge the extent to which businesses in Ghana's Construction sector have access to formal financial services. Second, we examine the causality between financial inclusion variables and output using ordinary least squares regression. A cross-sectional information from 42 ABC-approved construction companies in Greater Accra were used. The research revealed that not all characteristics related to financial inclusion were important to the success of businesses in the construction industry. However, it was concur with the prevailing research that easy access to financial resources positively correlates with economic success. Long-term financial services have a significant impact on financial results.

Additionally, it was shown that rules and laws have a substantial impact on business results. The findings have significant implications for future policy development, especially in a country with a severe infrastructure deficit. If these policies succeed in making construction businesses more financially accessible to more people, it will significantly impact the performance of these businesses. The construction industry in Ghana would benefit greatly from these policies if they placed a greater emphasis on the supply of long-term financial services.

Financial deposite to GDP among commercial bank on economic growth.

Agyei (2018) looked at the state of the country's financial sector to determine what factors contribute to economic growth in Ghana. In this study, we employed Granger causality testing, Cointegration analysis, and the Vector Error Correction Model to examine four proxies for economic growth

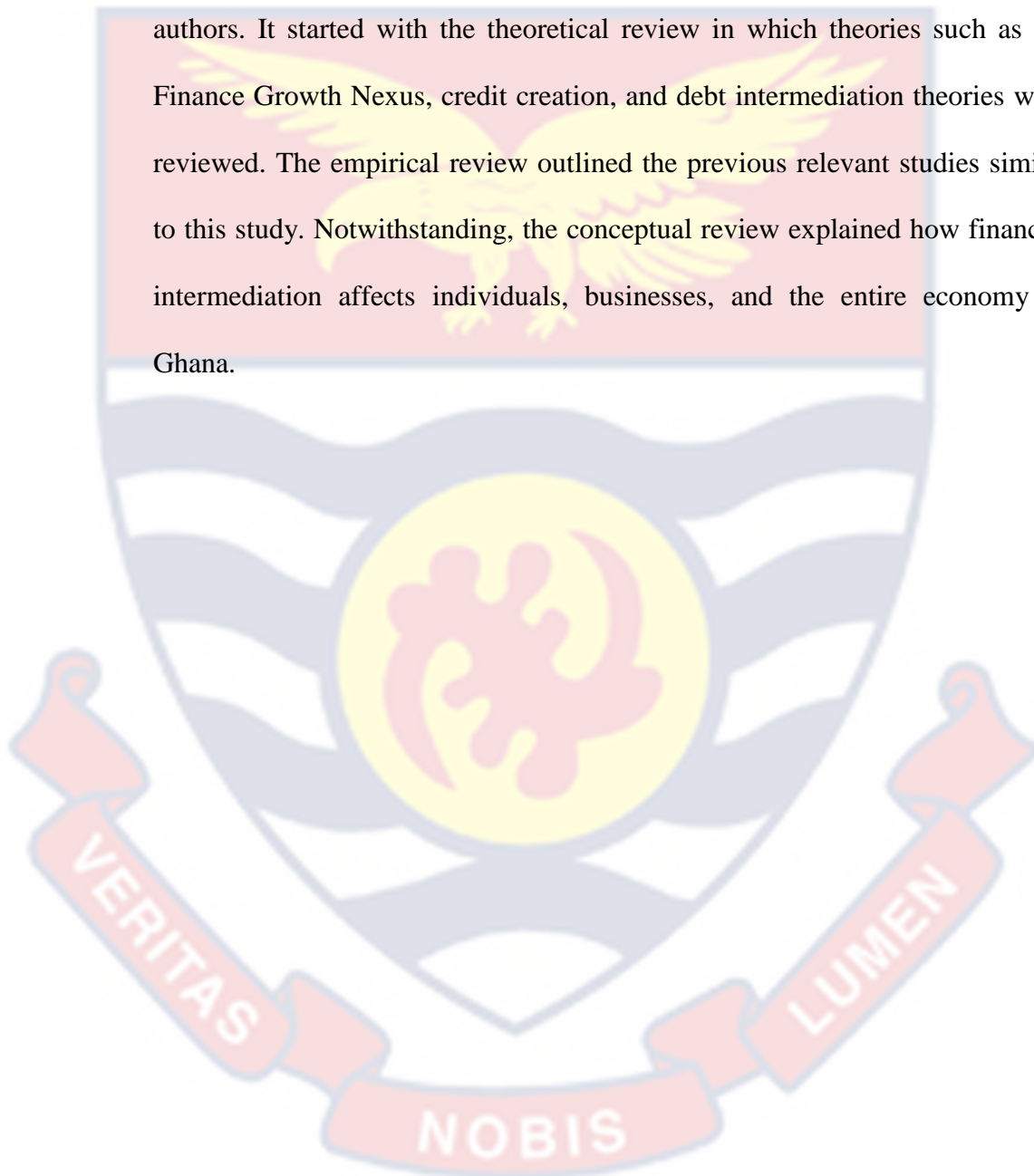
(VECM). The empirical findings demonstrated that financial development leads to economic growth, but the direction of causality varies depending on the proxy used to measure financial development. It was found that the proxy of financial development determines whether finance follows the path of economic growth or leads to economic growth. Finance drives economic expansion when measured by credit expansion to the private sector (CPSY). On the other hand, when wide money to GDP (M2+Y) was employed as a proxy for financial development, finance was shown to be behind growth. Cointegration studies from the empirical literature suggest a positive long-run connection between financial development and economic expansion.

A study of the effect of commercial bank expansion on economic growth in Namibia was undertaken by Paavo (2018). This research examines how the expansion of commercial banks in Namibia has affected the country's overall economic growth. The study used Auto-Regression Distributive Lag (ARDL) analysis to determine the existence of both short-run and long-run correlations using quarterly data on GDP and several commercial banks development metrics from March 2005 to December 2016. The Granger causality test also established a link between banking sector growth and GDP expansion. Based on ARDL findings, the study found that the expansion of the banking sector is positively correlated with GDP expansion in the short run via banks' financing liabilities and net interest income. According to the results of the causality test, there is a two-way causal relationship between economic growth and the growth of the banking sector. Based on these findings, the paper concludes that the proliferation of commercial banks affects the

economy of Namibia and calls for changes to the banking system to boost lending and stimulate growth.

Chapter Summary

This chapter reviewed the relevant theories and studies of previous authors. It started with the theoretical review in which theories such as the Finance Growth Nexus, credit creation, and debt intermediation theories were reviewed. The empirical review outlined the previous relevant studies similar to this study. Notwithstanding, the conceptual review explained how financial intermediation affects individuals, businesses, and the entire economy of Ghana.



CHAPTER THREE

RESEARCH METHODS

Introduction

The study investigated how financial intermediation affects economic growth in Ghana. This chapter describes the research methods, design, and procedures for conducting this study. It specifically examined and detailed the research approach, study population, study samples, research instruments, and the tools and techniques employed for data collection. It also examined the data analysis procedures used and discussed in detail the general mechanism employed in conducting research in this chapter.

Research Approach

Several research approaches exist in conducting research, but the most commonly used ones are the qualitative, quantitative, and mixed approaches. This research will use the quantitative approach in conducting this study. According to Ak, Kirca and Altintas (2016), quantitative research is preferable when the researcher wants to be more objective. In a quantitative study, the research processes are verifiable and can be measured in figures. The research chose this approach because quantitative research is often associated with objectivity. After all, it relies on numerical data and statistical analysis, which can be verified and replicated. Quantitative research can provide precise measurements of variables, allowing researchers to make more accurate and reliable conclusions. Quantitative research is often used to test hypotheses or theories. Researchers can use statistical analysis to determine whether their findings are statistically significant, which can help to support or reject their hypotheses.

Research Design

Regarding data collection and analysis, research design refers to the plan or framework used to conduct the study (Orodho, 2015). Because of the way the study was set up, the researcher was able to draw several important findings from it. The study employs the Explanatory Sequential Survey Design to expand on the findings of one method with another. It involves the collection and analysis of quantitative data. It is based on secondary data sources from the IMF, World Bank, Bank of Ghana, and other authorities in the financial sector.

Target Population

The number of financial institutions in Ghana within Ghana and across its population was used. Commercial banks in Ghana will be used as a target. Branches of commercial banks are the retail sites of commercial banks and other resident banks that function as commercial banks and provide financial services to consumers in a way that is unique from the main office but not structured as a legally independent subsidiary (IMF, Financial Access Survey, 2019).

Sampling and Sample Size

Number of Commercial banks in Ghana were selected for the study. The study used the census sampling method to select all the twenty-three (23) commercial banks in Ghana that survived the minimum capital requirement increment. Bank assets, credit administration, and financial transactions through e-banking services were used to measure the impact of financial intermediation on economic growth.

Data Collection and Sources

Over this research, we drew on secondary information from the World Bank and the Bank of Ghana's quarterly world development indicators for the 14 years beginning in 2007 and ending in 2021. Data were collected on the value of mobile money transactions, credit supply to the private sector, GDP growth rate, and quantum of Bank assets as a percentage of the GDP of Ghana, respectively. The data for financial intermediation was obtained from IMF and BoG databases.

Data Analysis Procedure

Annual time series data acquired from other sources were used for analysis in this project. The analysis employed the "Unit Root Test," the "Cointegration Test," the "Vector Error Correction Model," and the Generalised Method of Moments. Especially in the fields of accounting and finance, researchers often rely on secondary data to put hypotheses to the test. Ghanaian annual time series data from 2007 to 2021 were used for this analysis.

Description of variables

In this study, all variables used for analysis were divided into two: the dependent and the independent variables. The key dependent variable is the economic growth rate, the per capita income growth rate measured. The independent variable is the financial intermediation measured by several variables.

Dependent variables

The main dependent variable, the economic growth rate, will be measured using the per capita income, which is the annual GDP divided by the population of Ghana between the years 2007 to 2021 respectively.

Independent variables

The main independent variable is financial intermediation. The variables that were used to measure the financial intermediation include the digitized financial system, which the value of mobile money transactions represented in Ghana from 2007 to 2021, bank asset to GDP, bank lending rates, bank's credit to the private sector as a percentage to GDP, available in the financial sector of Ghana.

Digitised financial System

In order to examine how the digitisation of the financial system of Ghana has increased access to financial services and its impact on economic growth, the study analysis how the value of mobile banking transactions, especially mobile money, has affected economic growth. To do that analysis, secondary data was collected from the bank of Ghana's big data. According to Ahamed and Mallick (2019), financial openness should positively influence economic growth because countries that are open to global markets through digitising financial services experience more capital flows. A country's foreign direct investment (FDI) inflows can drive economic growth through several channels, such as advanced technology, competitiveness in the domestic market, and efficient management. Given this, the digitisation of financial services is expected to correlate positively with economic growth.

Bank asset to GDP.

Bank asset indicates the amount of investment in the financial sector of an economy. According to the principles of Keynesian economics, domestic investments stand in for a country's aggregate demand. Increased employment and higher output likely result from a surge in domestic investment. Bank assets serving as domestic investments have been theorised to have several connections to overall economic expansion. Prior researchers like Agufa (2016). In their recent paper, Abor, Amidu, and Issahaku (2018) show that banks' assets contribute to economic expansion. It is reasonable to assume that bank assets will stimulate economic expansion because they provide economic opportunity.

Credit to the private sector (% of GDP)

According to Ojiegbe, Oladele, and Makwe (2016), the amount of credit banks create in an economy significantly affects economic growth. However, the relationship between credit to the private sector as a percentage of GDP and economic growth remains inconclusive. It can be a positive, negative, and sometimes neutral relationship. Given that an increasing level of credit to the private is associated with improvement in the standard of living, especially where credits are channelled to investment. Therefore, it is expected that credit to the private sector will increase economic growth

Capital adequacy ratio

The capital adequacy ratio is the percentage of a bank's capital to its risk-weighted assets. Risk-sensitivity ratios define the weights calculated using the relevant Basel II Accord ratio. According to World Bank Report (2017), the Basel II Accord requires commercial banks in emerging economies

to maintain a capital adequacy ratio not lower than 8% of the assets. Some of the commonly used methods for computing capital adequacy ratios include the following:

$$\text{Common Equity Ratio} = \frac{\text{Common Equity Tier 1}}{\text{Credit risk – adjusted value of asset}} \geq 4.5\%$$

$$\text{Tier 1 Capital Ratio} = \frac{\text{Tier 1 Capital}}{\text{credit risk-adjusted asset value}} \geq 6\%$$

$$\text{Total Capital Ratio} = \frac{\text{Tear 1 + Tear 2}}{\text{Credit Risk – Adjusted Asset value}} \geq 8\%$$

$$\text{Leverage Ratio} = \frac{\text{Tear 1 Capital}}{\text{Average total consolidated asset value}} \geq 3\%$$

This study adopted the third approach in computing the capital adequacy ratio of the Ghana commercial banks because it considered both Tear 1 and Tear 2 capital ratios.

Inflation

Inflation increases the prices of goods and services that households purchase. It is computed as the rate of change in the purchase prices. According to the Bank of Ghana Report (2018), inflation is better understood when computed using a single item's price.

However, in real life, the inflation rate is computed by collecting prices from various sources such as retailers, supermarkets, departmental stores and websites where households shop. Prices are also collected from government authorities, energy providers, and real estate agents. This study adopted the computed inflation rate by the Bank of Ghana from 2007 to 2021.

Model Specification

In order to analyse the effect of financial intermediation on economic growth, an econometric model is deduced based on the selected variables of the study as follows:

$$EGR = \alpha + \beta_1 CSP_{t_1} + \beta_2 VMM_{t_2} + \beta_3 BAGDP_{t_3} + \varepsilon$$

Where; ERG = Economic growth rate represented by annual GDP growth rate divided by population growth rate

CSP = Credit supplied to the private sector, which will be represented by the amount of loans that commercial banks grant to customers

VMM = Value of Mobile Money transactions represented by the amount in cedis

BAGDP = Bank asset to gross domestic product

ε = An error term that represents the unaccounted factors

β_1 to β_3 represent the coefficients of the independent variables

α = connotes the intercept

Chapter Summary

This chapter examined the kind of research method that was used in conducting this research. It outlined the research approach used, the research design adopted, the study's target population, sampling and sample size used, data collection and sources, data analysis procedure, description of variables categorised into dependent and independent variables, and model specification used for the analysis. These were arranged in order that is acceptable to the research guidelines at the University of Cape Coast.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

The main purpose of this study was to investigate how financial intermediation affects economic growth in Ghana. This chapter presents the study's results to determine the relationship between financial intermediation and economic growth. To analyse these, the following research questions were posed for analysis: What is the effect of the e-banking financial system on economic growth? How does bank lending to the private sector among commercial banks influence economic growth? How does the financial deposits to GDP ratio among commercial banks influence economic growth?

The following hypothesis was formulated

$H_1: p \neq 0$: The e-banking financial system has no effect on the economic growth of Ghana.

$H_2: p \neq 0$: Bank credit to the private sector among commercial banks has no influence on economic growth.

$H_3: p \neq 0$: Bank asset to GDP ratio among commercial banks has no influence on economic growth.

The key research findings were presented in a tabular and graphical form by research questions, and hypotheses and interpretations with reference to relevant literature were presented. However, before the analysis, financial data were subjected to descriptive statistics, unit root tests, normality tests, stability tests, and cointegration analyses.

Descriptive Statistics

In this study, various descriptive statistics, such as tests for normality, unit root, and cointegration tests, were carried out and presented in tabular and graphical statistical forms.

Measuring Economic Growth Rate

This was proxied by the per capita growth rate in Ghana, GDP growth divided by population growth rate. The pattern of growth rate in the Ghanaian economy is presented in Figure 2.

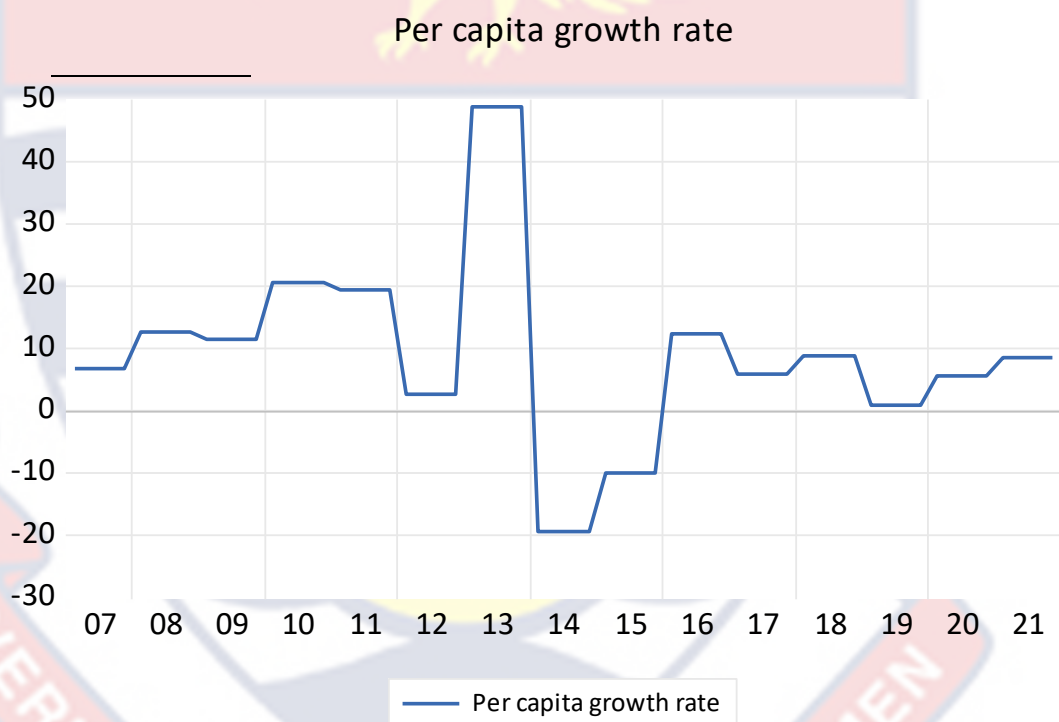


Figure 2: Per capita growth rate

Source: Author's own estimate, computed from Eview version: 12

The graph found that Ghana's per capita growth rate had fluctuated over the years, with a slightly stable growth from 2007 until mid-2009, when the growth pattern exhibited the most volatile economic conditions. However, growth peaked at its highest between 2012 and mid-2013 and sharply declined in mid-2013 due to financial market volatility. According to Agarwal (2015), several factors account for volatile economic growth rates, such as the

physical availability of human capital and natural resources, technological development, entrepreneurship, population growth, and social overheads.

Research Question One

Research question one aimed to examine the effect of the e-banking financial system on economic growth. The finding is presented below.



Table 2: Descriptive statistics and Normality Test

Date: 09/21/22

Sample: 2007Q12021Q4

	PER_CAPIT.	BANK_ASS.	CAPITAL_A.	CREDIT_TO	INFLATION	MOMO	REAL_INTER
Mean	8.836000	21.02067	17.90067	13.97467	12.83667	2209.249	25.69400
Median	8.480000	21.22000	18.20000	14.38000	11.81000	2221.910	24.58000
Maximum	48.78000	39.20000	19.83000	21.60000	19.25000	9532.000	43.97000
Minimum	-19.54000	9.680000	13.80000	9.930000	7.130000	16.55000	10.97000
Std. Dev.	14.67280	6.297646	1.637491	2.634714	3.449830	2417.130	10.56000
Skewness	0.777660	1.193908	-1.138166	1.219709	0.331566	1.693620	0.180305
Kurtosis	5.002791	5.606052	3.498055	5.464072	2.048789	6.049273	1.786778
Jarque-Berra	16.07548	31.23292	13.57436	30.05604	3.361363	51.92866	4.004869
Probability	0.000323	0.000000	0.001128	0.000000	0.186247	0.000000	0.135006
Sum	530.1600	1261.240	1074.040	838.4800	770.2000	132555.0	1541.640
Sum Sq.Dev.	12702.17	2339.960	158.2012	409.5615	702.1781	3.45E+08	6808.157
Observation	60	60	60	60	60	60	60

Sources: Field data (2022)

In Table 2, the descriptive statistics indicate that all variables mean was within the maximum and minimum values. Almost all the variables show positive skewness except the capital adequacy ratio, which indicated negative skewness of -1.138166. The Jarque-Bera statistics show the normality test that the data series were drawn from a normally distributed process, and the assumption of normality cannot be rejected since all the values are positive.

Unit Root Test

This test is carried out to determine if trending data should be first differenced or regressed on deterministic functions to make the data stationary. The test is important because it helps to identify some features underlying the data-generating series and to determine the stationarity of the data. This help to know whether the data were are dealing with now will change over time. According to Frimpong (2013), the unit root test help to determine if the variables we are analysing are evenly distributed and will not suddenly change with change in the short run with the slightest change in the prevailing circumstances. The results obtained from the unit root test are presented in Table 3.

Table 3: Unit Root Test at Levels

Group unit root test: Summary

Series: PER_CAPITAL_GROWTH_RATE, BANK_ASSET_TO_GDP,
CAPITAL_ADEQUACY_RATIO,
CREDIT_TO_PRIVATE_SECTOR_SUPPLIED_OF_GDP, INFLAQTION,
MOMO, REAL_INTEREST_RATE\

Date:09/21/22 Times: 18:36

Sample: 2007Q1 2021Q4

Exogenous variables: Individual effects

Automatics lag length selection based on SIC: 0 to 4

Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
<u>Null: Unit root (assumes common unit root process)</u>				
Lein, Lin & Chu t*	2.30586	0.9894	7	405
<u>Null: Unit root (assumes common unit root process)</u>				
Im, Pesaran and Shin W-stat	0.26026	0.6027	7	405
ADF-Fisher Chi-square	13.6431	0.4766	7	405
PP-Fisher Chi-square	24.0746	0.0449	7	405

** Probabilities for Fisher test are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Source: Authors own estimate, computed from Eview version 12.

Table 3 above shows that all the variables contain unit roots using all three assumptions of Pesaran and Shin W-stat, ADF-Fisher Chi-square and PP-Fisher Chi-square because the probability values are not less than 0.05 at a 5% significant level. This led to further analysis where unit roots were moreover tested at first difference as it has been displayed in Table 3 below:

Table 4: Co-integration Test Trace Results

Date: 09/21/22 Time: 20:55

Sample (adjusted): 2007Q3 2021Q4

Included observations: 58 after adjustments

Trend assumption: Linear deterministic trend

Series PER_CAPITA_GROWTH_RATE

BANK_ASSET_TO_GDP_CAPITAL_ADEQUACY_RATIO

CREDIT_TO_PRIV.

Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesised	Eigen value	Trace	0.05 Critical	Prob.**
No. of CE(s)		statistics	Value	
None	0.330133	75.90333	125.6154	0.9932
At most 1	0.262867	52.66410	95.75366	0.9943
Almost 2	0.233454	34.97487	69.81889	0.9910
Almost 3	0.168657	19.55495	47.85613	0.0931
Almost 4	0.095182	8.841603	29.79707	0.9926
Almost 5	0.021990	1.289655	3.841465	0.2561

Trace test indicates no cointegration at the 0.05 level

*denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Sources: Field work (2022)

Table 5: Co-integration Test Trace Results

Unrestricted Cointegration Rank Test (Trace)					
Hypothesised	Eigen value	Trace	0.05 Critical	Prob.**	
No. of CE(s)		statistics	Value		
None	0.330133	75.90333	125.6154	0.9932	
At most 1	0.262867	52.66410	95.75366	0.9943	
Almost 2	0.233454	34.97487	69.81889	0.9910	
Almost 3	0.168657	19.55495	47.85613	0.0931	
Almost 4	0.095182	8.841603	29.79707	0.9926	
Almost 5	0.021990	1.289655	3.841465	0.2561	

Max-eigenvalue test indicates no cointegration at the 0.05 level

*denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-value.

Table 6: Co-integration Rank Test

Unrestricted Cointegration Rank Test (Trace)					
Hypothesised	Eigen value	Trace	0.05 Critical	Prob.**	
No. of CE(s)		statistics	Value		
None	0.330133	75.90333	125.6154	0.9932	
At most 1	0.262867	52.66410	95.75366	0.9943	
Almost 2	0.233454	34.97487	69.81889	0.9910	
Almost 3	0.168657	19.55495	47.85613	0.0931	
Almost 4	0.095182	8.841603	29.79707	0.9926	
Almost 5	0.021990	1.289655	3.841465	0.2561	

Trace test indicates no cointegration at the 0.05 level

*denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Sources: Field data (2022)

From Table 6, the trace statistics results indicated no cointegration at the 5% significance level when the per capita growth rate is used as a proxy for economic growth. The implication is that there is no long-run relationship among the variables under study. The subsequent analysis in Table 5 below confirms that the maximum-eigenvalue statistic indicated no cointegration. However, after unrestricted adjustment coefficient (α), one cointegration equation was found with a loglikelihood value of -1149.888, indicating the long-run relation between the per capita growth rate and other explanatory variables.

Table 7: Max-eigenvalue Test Result

Unrestricted Cointegration Rank Test (Max-eigenvalue)					
Hypothesised	Eigen value	Trace	0.05 Critical	Prob.**	
No. of CE(s)		statistics	Value		
None	0.330133	23.23924	46.23142	0.9880	
At most 1	0.262867	17.68923	40.07757	0.9940	
Almost 2	0.233454	34.97487	33.87687	0.9679	
Almost 3	0.168657	19.55495	27.58434	0.9722	
Almost 4	0.095182	8.841603	21.13162	0.9865	
Almost 5	0.029733	1.750686	14.26460	0.9953	
Almost 6	0.021990	1.289655	3.841465	0.2561	

Max-eigenvalue test indicates no cointegration at the 0.05 level

*denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Source: Field data (2022)

Based on Table 6 and 7 results of both the trace and the maximum eigenvalue statistic, it was indicated that there was no presence of

cointegration among the variables because probability values are higher than 0.05 and the trace statistics value of 75.9033 and max-eigen values of 23.2394, are higher than 0.05 significance levels respectively. This implies that the model will not likely converge if there are market shocks. Therefore, since this analysis has a single equation, only the granger causality test and short-run least square estimates (VAR) would be computed. The granger causality test result and regression least square estimates for the short-run analysis have been presented below.

Research Question Two

Granger Causality Test

The Granger causality method was used to examine the structure of the causal links between the research variables using data from Table 7. A statistical hypothesis test, the Granger causality test, can be used to see if one time series can accurately predict another. The null hypothesis of no causal association is rejected, and the alternative hypothesis is accepted if the probability value is smaller than any of the alpha levels. Using the lags shown in Table 7, the researcher can conclude that the null hypothesis that the ratio of bank assets to GDP is not a causal factor in the rate of return on equity can be rejected with a 5% confidence level. The reason is that the probability value of 0.6559 and 0.9472 was greater than the 0.05 significant level. Thus, in Table 7, a unidirectional causality ran through all the variables with probability values greater than a 5% significant level. Therefore, in this study, the null hypothesis that the various variables such as bank asset to GDP, capital adequacy ratio, credit to private sector supplied, inflation, the value of mobile money transaction, and real interest rate does not granger cause per capita

growth rate were rejected. This implied that all the listed variables have a causal relationship with the per capita growth rate.

Therefore, the study rejects the following hypothesis:

$H_1: p \neq 0$: The e-banking financial system has no effect on the economic growth of Ghana.

$H_2: p \neq 0$: Bank credit to the private sector among commercial banks has no influence on economic growth.

$H_3: p \neq 0$: Bank asset to GDP ratio among commercial banks has no influence on economic growth. These causal relationships have been summarised in

Table 8 below:

Table 8: Granger Causality Test Result
Pairwise Granger Causality Test
Date: 09/22/22 Time: 18:02
Sample: 2007Q1 2021Q4
Lags: 2

	Obs	F-	Prob.
	Statistics		
BANK ASSET TO GDP does not Granger Cause PER_CAPITA_GROWTH RATE	58	0.42519	0.6559
PER_CAPITA_GROWTH_RATE does not Granger Cause BANK_ASSES_TO_GDP		0.05429	0.9472
CAPITAL_ADEQUACY_RATIO does not Granger Cause PER_CAPITA_GROWTH RATE	58	0.00266	0.9973
PER_CAPITA_GROWTH_RATE does not Granger Cause CAPITAL_ADEQUACY_RATIO	58	0.04530	0.9557
CREDIT_TO_PRIVATE_SECTOR_SUPPLY_OF GROWTH RATE	58	0.04791	0.9533
PER_CAPITA_GROWTH_RATE does not Granger Cause INFLATION		0.19496	0.8235
INFLATION does not Granger Cause PER_CAPITA_GROWTH RATE	58	0.33229	0.7188
PER_CAPITA_GROWTH_RATE does not Granger Cause INFLATION		0.09410	0.9103

MOMO does not Granger Cause PER_CAPITA_GROWTH RATE	58	0.25922 0.90805	0.7726 0.4095
PER_CAPITA_GROWTH_RATE does not Granger Cause MOMO			
REAL_INTEREST_RATE does not Granger Cause PER_CAPITA_GROWTH RATE	58	0.56946	0.5693 0.9885
PER_CAPITA_GROWTH_RATE does not Granger Cause REAL_INTEREST_RATE		0.01363	
CAPITAL_ADEQUACY_RATIO does not Granger Cause BANK_ASSET_TO_GDP does not Granger Cause CAPITAL_ADEQUACY_RATIO	58	0.30853 1.41537	0.735 0.2519
CREDIT_TO_PRIVATE_SECTOR_SUPPLIED_OF_GDP does not Granger Cause BANK_ASSET_TO_GDP does not Granger Cause CREDIT_TO_PRIVATE_SECTOR_SUPPLIED_OF_GDP	58	1.08145 0.34494	0.3465 0.7098
INFLATION does not Granger Cause BANK_ASSET_TO_GDP BANK_ASSET_TO_GDP does not Granger Cause INFLATION	58	0.75638 0.32046	0.4744 0.7272
MOMO does not Granger Cause BANK_ASSET_TO_GDP BANK_ASSET_TO_GDP RATE does not Granger Cause MOMO	58	0.68176 0.91393	0.5101 0.4072
REAL_INTEREST_RATE does not Granger Cause BANK_ASSET_TO_GDP BANK_ASSET_TO_GDP does not Granger Cause REAL_INTEREST_RATE	58	1.10902 0.03676	0.3374 0.9639
CREDIT_TO_PRIVATE_SECTOR_SUPPLIED_OF_GDP does not Granger Cause CAPITAL_ADEQUACY_RATIO does not Granger Cause CREDIT_TO_PRIVATE_SECTOR_SUPPLIED_OF_GDP	58	0.31834 0.19301	0.7287 0.8250
INFLATION does not Granger Cause CAPITAL_ADEQUACY_RATIO CAPITAL_ADEQUACY_RATIO does not Granger Cause INFLATION	58	0.16975 1.84531	0.8443 0.1680
MOMO does not Granger Cause CAPITAL_ADEQUACY_RATIO CAPITAL_ADEQUACY_RATIO does not Granger Cause MOMO	58	0.55171 0.52967	0.5792 0.5919
REAL_INTEREST_RATE does not Granger Cause CAPITAL_ADEQUACY_RATIO CAPITAL_ADEQUACY_RATIO does not Granger Cause REAL_INTEREST_RATE	58	0.67751 0.14891	0.5122 0.8620

INFLATION does not Granger Cause	58	1.04084	0.3603
CREDIT_TO_PRIVATE_SECTOR_SUPPLIED_OF_GDP		0.14882	0.8621
CREDIT_TO_PRIVATE_SECTOR_SUPPLIED_OF_GDP			
does not Granger Cause INFLATION			
MOMO does not Granger Cause	58	0.35569	0.7024
CREDIT_TO_PRIVATE_SECTOR_SUPPLIED_OF_GDP			
CREDIT_TO_PRIVATE_SECTOR_SUPPLIED_OF_GDP		0.48814	0.6177
does not Granger Cause MOMO			
REAL_INTEREST_RATE does not Granger Cause	58	0.59356	0.5560
CREDIT_TO_PRIVATE_SECTOR_SUPPLIED_OF_GDP			
CREDIT_TO_PRIVATE_SECTOR_SUPPLIED_OF_GDP		0.87102	0.4244
does not Granger Cause REAL_INTEREST_RATE			
MOMO does not Granger Cause INFLATION	58	0.18512	0.8315
INFLATION does not Granger Cause MOMO		0.17059	0.8436
REAL_INTEREST_RATE does not Granger Cause	58	0.24272	0.7854
INFLATION			
INFLATION does not Granger Cause		0.19495	0.8235
REAL_INTEREST_RATE			
REAL_INTEREST_RATE does not Granger Cause	58	1.49977	0.2325
MOMO			
MOMO does not Granger Cause		0.02293	0.9773
REAL_INTEREST_RATE			

Source: Field data (2022)

In Table 8, the pairwise granger causality test result indicated that all the variables had unidirectional positive values, and the p-values were greater than the 5% significant values. This implies that the null hypothesis is that the e-banking financial system does not affect Ghana's economic growth. Ghana Bank credit to the private sector among commercial banks does not influence economic growth. Bank asset to GDP ratio among commercial banks does not affect economic growth. This suggested that the variables have a significant influence on economic growth.

Research Question Three

Correlation Analysis

The study analysed the relationship between the variables using Pearson moment correlation analysis. It was found that there is a negative (-0.1325) relationship between the per capita growth rate and the bank's asset to GDP. However, the study found a positive relationship between the per capita growth rate and the variables like capital adequacy ratio, credit supplied to the private sector, inflation, mobile money transaction, and the real interest rate. These relationships have been summarized in Table 9.

Table 9: VAR Correlation Analysis Results

	PER_CAPIT...	BANK_ASS...	CAPITAL_A...	CREDIT_TO...	INFLATION	MOMO	REAL_INTE...
PER_...	1	0.09556184...	0.09919753...	-0.0187669...	-0.0746969...	-0.3058786...	-0.0422287...
BANK_...	0.09556184...	1	-0.0281966...	0.10319674...	0.19353902...	0.81336252...	-0.7844431...
CAPIT...	0.09919753...	-0.0281966...	1	-0.7209759...	-0.0192873...	0.00316353...	0.09086210...
CREDI...	-0.0187669...	0.10319674...	-0.7209759...	1	-0.0582451...	0.08607964...	-0.2107765...
INFLAT...	-0.0746969...	0.19353902...	-0.0192873...	-0.0582451...	1	-0.0139910...	-0.0039286...
MOMO	-0.3058786...	0.81336252...	0.00316353...	0.08607964...	-0.0139910...	1	-0.8142602...
REAL_...	-0.0422287...	-0.7844431...	0.09086210...	-0.2107765...	-0.0039286...	-0.8142602...	1

Source: Field data (2022)

Regression Analysis

This study used ordinary least square regression to estimate the coefficients of linear regression equations, which describe the relationship between one or more independent quantitative variables, which are the bank asset to GDP, credit supplied to the private sector, inflation, mobile money transaction, and the real interest rate and the dependent variable which is the economic growth rate. The linear relationship between the various variables and the per capita growth rate was estimated using the ordinary least square method and presented as follows in Table 10 below:

Table 10: Regression Analysis Results

Dependent Variable: PER_CAPITA_GROWTH_RATE

Method: Least Squares

Date: 09/22/22Time 17:32

Sample: 2007Q1 2021A4

Included observation: 60

Variable	coefficient	Std. Error	t. Statistics	Prob.
BANK_ASSET_TO_GDP	3.846469	0.813837	4.726341	0.0000
CAPITAL_ADEQUACY_RATE	-0.864771	1.607222	-0.538053	0.5928
CREDIT_TO_PRIVATE_SECT	-0.264055	0.786572	-0.335704	0.7384
OR_SUPPLY				
INFLATION	-1.686115	0.475702	-3544477	0.0008
MOMO	-0.010942	0.001981	-5.524892	0.0000
REAL_INTEREST_RATE	-0.349591	0.160354	-2.180122	0.0337
C	1.951594	33.94146	0.057499	0.9544
R- squared	0.460708	Mean depended var.		8.836000
Adjusted R- squared	0.399656	S.D. dependent var		14.67280
S.E. of regression	11.36876	Akaike info criterion		7.808896
Sum squared resid	6850.177	Schwarz criterion		8.053236
Log-likelihood	-227.2669	Hannan-Quinn criter		7.904470
F-statistic	7.546168	Durbin-Watson stat		0.606200
Prob(F-statistic)	0.000007			

Source: Field data (2022)

In Table 10, the R square value signifies the percentage variation in the dependent variables explained by the independent variables. From Table 10, the R-square of 0.4607 suggested that the proportion of variance of economic growth rate is explained by 46.07% of the other independent variables, which include the capital adequacy ratio, credit supplied to the private sector, inflation, mobile money transaction, and the real interest rate. The t-statistics value of 4.726341 and the probability value of 0.000 confirm a significant linear relationship between bank assets to GDP and the per capita growth rate. The regression coefficient of 3.846469 suggests the extent to which an increase in the per capita growth rate led to a 3.8 increase in bank assets to GDP. On the other hand, the capital adequacy ratio of -0.864 indicates that an increase in the per capita growth rate by 1% will lead to a 0.864% fall in the capital adequacy ratio. All the independent variables, credit supplied to the private sector, inflation, mobile money transaction, and the real interest rate, exhibited a negative relationship towards the economic growth rate with the various coefficients -0.264, -1.686, -0.010, and -0.349, respectively.

Breusch-Godfrey Serial Correlation Test

This test was carried out to determine the serial correlation in the errors in the regression model. It used the residuals from the above regression model in Table 11. This test determines the null hypothesis that the regression model has no serial correlation or that the error variances are equal. The results of the serial correlation test have been summarised in Table 11 below:

Table 11: Serial Correlation Test

Bruesch-Godfrey Serial Correlation LM Test:

Null hypothesis: No serial correlation at up to

F-statistic	25.11251	Prob.F(2,51)	0.0000
Obs *R-squared	29.77032	Prob.Chi-Square (2)	0.0000

Test Equation:

Dependent Variable: RESID 4.726341

Method: Least Squares

Date: 09/23/22 Time:13:53

Sample: 2007Q 1 2021Q4

Included observations: 60

Presample missing value lagged

residual set to zero

Variable	Coefficient	Std. Error	t.Statist	Prob.
BANK_ASSET_TO_GDP	0.167932	0.593576	0.282917	0.7784
CAPITAL_ADEQUACY_RATIO	0.160688	1.65155	0.137911	0.8909
CREDIT_TO_PRIVATE_SECTO	-0.124597	0.571833	-0.217891	0.8284
R_SUPPLY				
INFLATION	0.078318	0.345962	0.226377	0.8218
MOMO	-0.000475	0.001449	-0.328156	0.7441
REAL_INTEREST_RATE	-0.349591	0.160354	-1.141798	0.8878
C	-4.154411	24.62911	-0.169085	0.8664
RESID(-1)	0.810989	0.137504	5.897928	0.0000
RESID(-2)	-0.164563	0.141322	-1.164453	0.2497

R- squared	0.496172	Mean depended var.	-8.67E-15
Adjusted R- squared	0.417140	S.D. dependent var	10.77519
S.E. of regression	8.226345	Akaike info criterion	7.190042
Sum squared resid	3451.311	Schwarz criterion	7.504194
Log-likelihood	-206.7013	Hannan-Quinn criter	7.312924
F-statistic	6.278128	Durbin-Watson stat	0.999215
Prob(F-statistic)	0.0000012		

Source: Field data (2022)

From Table 11, the p-value for Breusch-Godfrey serial correlation test is less than the 5 % significant level, which means I can reject the null hypothesis and conclude that autocorrelation or serial correlation exists among the independent variables or the residuals. To address the autocorrelation in model a, vector error correction (VEC) estimates were made for the model's dummy variables (see the Appendix for the VEC table). In the VEC Table in the appendix, apart from bank assets to GDP, they indicated a positive relationship towards the per capita growth rate; all the other variables exhibited a negative relationship.

Chapter Summary

This chapter presented the summary of the study's findings and provided an interpretation of the analysis of the result. It uses time series data from 2007 to 2021 and Eview software to aid the analysis. It presented the unit root and cointegration test, followed by descriptive statistics. It continued with the granger causality test followed by correlation and regression analysis. Afterwards, the robustness of the regression model was tested for autocorrelation or serial correlation using the Breusch-Godfrey Serial Correlation Test to address the presence of autocorrelation in the model, and a vector error correction (VEC) estimate was made.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

The main purpose of this study was to examine how financial intermediation affects economic growth in Ghana. Three research objectives underpin the study. Analyse how the e-banking financial system affects economic growth to analyse how the e-banking financial system affects economic growth. To examine how bank lending to the private sector among commercial banks influences economic growth. To ascertain how banks' asset-to-GDP ratio among commercial banks influences economic growth

A quantitative research method embedded with an explanatory sequential design was employed for the study. This chapter presented the summary, conclusions, and recommendations. The recommendation aspect presented the necessary remedies to be implemented by financial institutions and offered suggestions for future studies.

Summary of the Study

The study examined the relationship between financial intermediation and Ghana's per capita economic growth rate using annual time series data from 2007 to 2021. The long-run relationship between financial intermediation and the economic growth rate in Ghana was analysed using cointegration, ordinary least square estimates and granger causality approaches. The study used vector error correction (VECM) to examine the long-run and short-run relationships among the variables used in the estimation. The study examined the causal relationships and financial intermediation and economic growth. The main dependent variable is the GDP

per capita growth rate, while the other independent variables include: bank asset to GDP, capital adequacy ratio, credit to private sector supplied, inflation, the value of mobile money transactions and real interest rate. All analyses and estimations were made using the E-views software version 12.

Summary of Key Findings

The study revealed the following findings

1. It was found that the granger causality test had a unidirectional positive relationship between the per capita GDP ratio and the rest of the independent variables, thereby rejecting the null hypothesis that the variables do not granger cause economic growth.
2. It was established that there is a significant positive relationship between financial intermediation and economic growth in Ghana
3. There was a positive relationship between economic growth, which was proxied by per capita income and the bank asset to GDP.
4. Bank asset to GDP has a positive relationship with economic growth.
5. The coefficient of the error correction term indicates the speed of adjustment of the per capita growth rate to long-run equilibrium due to changes in the financial market as a result of changes in the independent variables, which include the bank asset to GDP, capital adequacy ratio, credit to private sector supplied, inflation, the value of mobile money transaction and real interest rate.

Conclusions

The findings established a significant positive relationship between financial intermediation and economic growth in Ghana. A literature review during the study has confirmed that financial intermediation has generated

much research interest among researchers due to its importance to economic development. The study, in line with previous empirical literature, revealed a positive causality between the variables of financial intermediation, which were measured by bank asset to GDP, capital adequacy ratio, credit to private sector supplied, inflation, the value of mobile money transaction, and real interest rate, and economic growth which was measured by per capita growth rate. There was an adjustment to the economic growth in the short run. However, the study also found a unidirectional causality between economic growth and the variables of financial intermediation. This also suggested that financial intermediation influences economic growth, which implies that a positive economic growth rate stimulates demand for financial services, increasing financial intermediation and creating jobs in the economy's financial and other sectors.

Recommendations

Based on the findings of the study, the following recommendations were proposed:

Recommendation for policy formulation

1. In collaboration with the Bank of Ghana and other financial sector stakeholders, the government of Ghana should aim to develop or formulate policies that will increase financial intermediation and persistently promote policies that will reform the financial sector to foster economic growth.
2. There should be a policy and educational campaigns by the government and BOG through NCCE that will promote financial

intermediation by ensuring more financial inclusion among those in the informal sector and the rural areas.

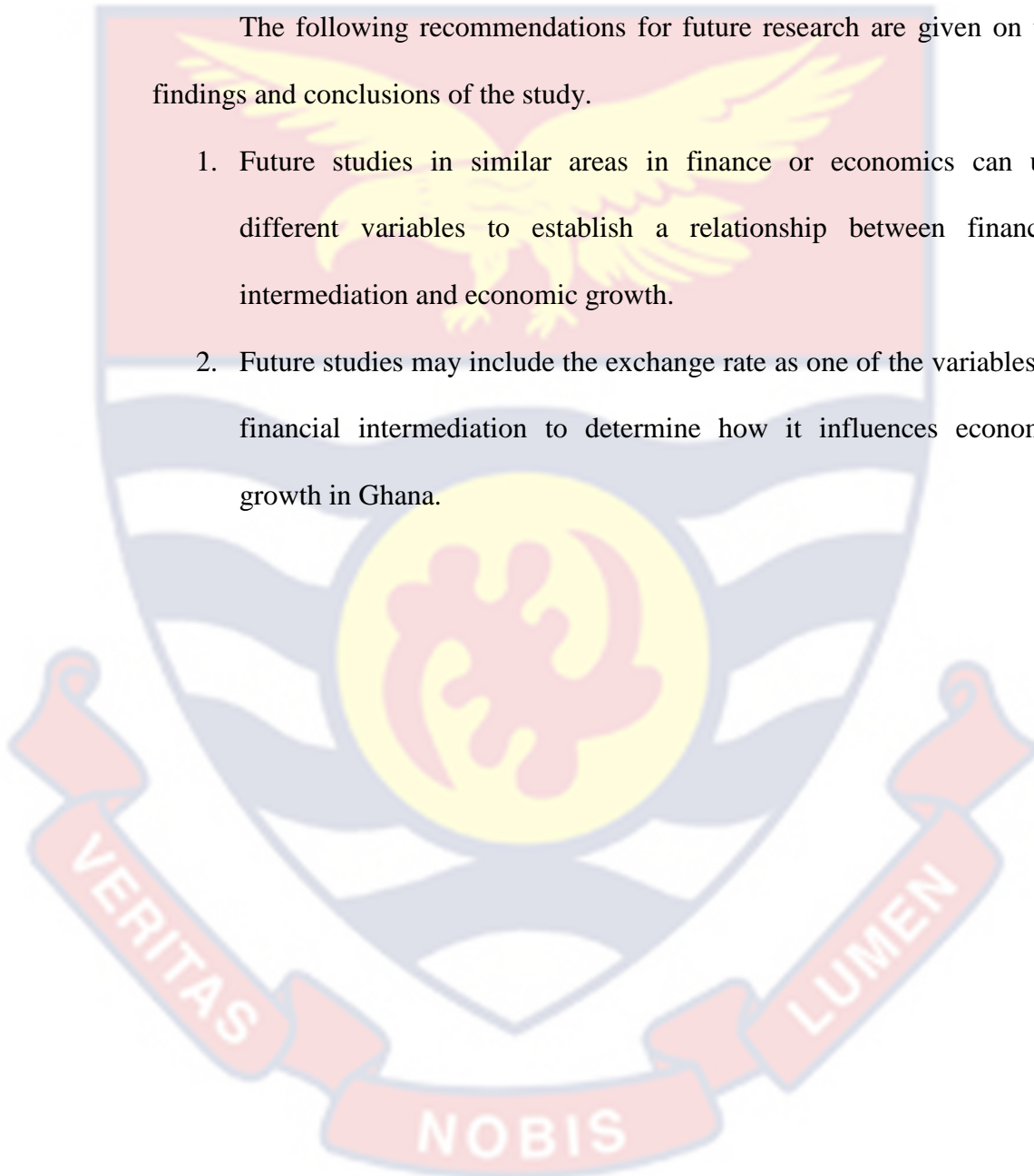
3. Also, there should be an effective policy to lower the minimum capital requirement for microfinance institutions and other financial institutions that operate in rural areas where most commercial banks are to ensure massive access to financial services and promote financial intermediation.
4. In addition, the government and Bank of Ghana should ensure macroeconomic stability and roll out policies to improve mobile networks in the rural areas to promote e-banking services in the informal and rural areas to increase financial service accessibility.
5. The financial sector regulators should closely monitor the activities of micro-financial institutions and rural banks while promoting access to financial services.
6. Government, through the National Communication Authority, should not relax in the effort to make sure that all mobile money users have been dully registered so that e-banking can be promoted through the use of a mobile phone in every sector of the country where a mobile network is available.
7. The government of Ghana, through the Bank of Ghana as a financial regulator, should consider providing education through the Ministry of Communication to those who lost their deposits through the financial sector clean-up exercise and help the victims to retrieve their funds to restore confidence in the citizens to access financial services in order not to deter people from using the mobile money services which have

the potential to promote financial intermediation and economic growth considering the positive unidirectional causality between financial intermediation and economic growth.

Suggestions for Future Research

The following recommendations for future research are given on the findings and conclusions of the study.

1. Future studies in similar areas in finance or economics can use different variables to establish a relationship between financial intermediation and economic growth.
2. Future studies may include the exchange rate as one of the variables of financial intermediation to determine how it influences economic growth in Ghana.



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APPENDICES

APPENDIX ‘A’

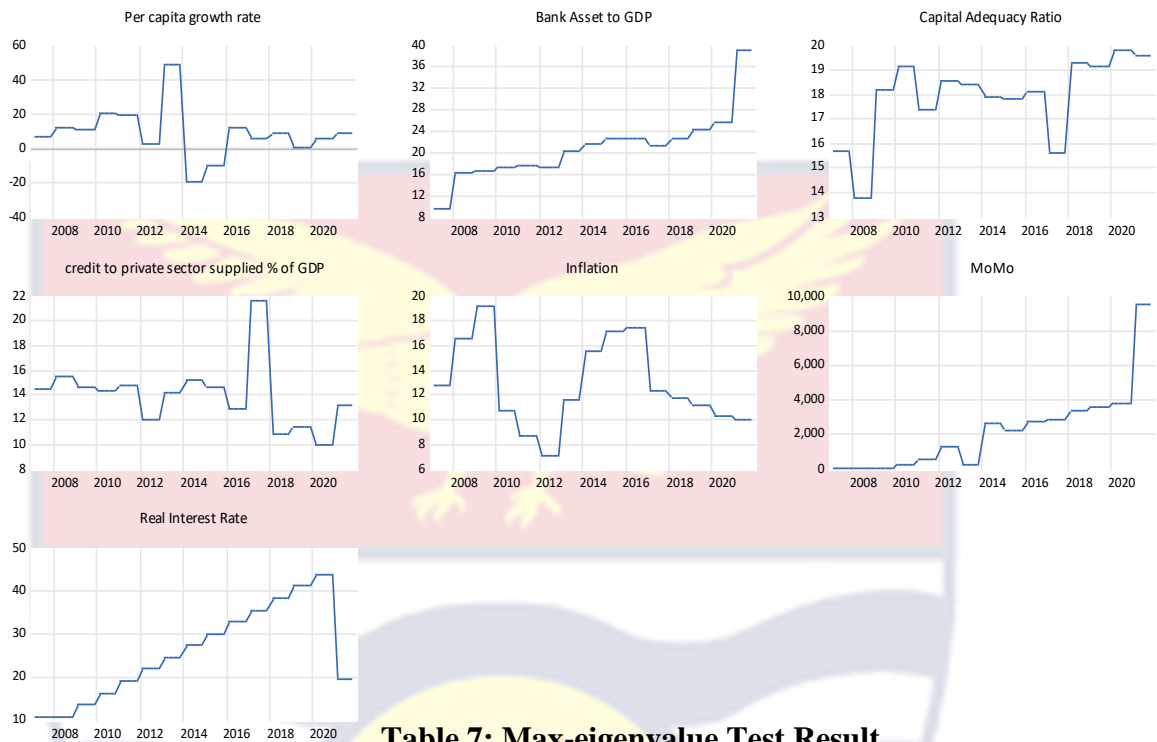


Table 7: Max-eigenvalue Test Result

Unrestricted Cointegration Rank Test (Max-eigenvalue)

Hypothesised No. of CE(s)	Eigenvalue	Trace statistics	0.05 Critical Value	Prob.**
None	0.330133	23.23924	46.23142	0.9880
At most 1	0.262867	17.68923	40.07757	0.9940
Almost 2	0.233454	34.97487	33.87687	0.9679
Almost 3	0.168657	19.55495	27.58434	0.9722
Almost 4	0.095182	8.841603	21.13162	0.9865
Almost 5	0.029733	1.750686	14.26460	0.9953
Almost 6	0.021990	1.289655	3.841465	0.2561

Max-eigenvalue test indicates no cointegration at the 0.05 level

*denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b*S11*b=I):

PER_CAPITA...	BANK_ASSE...	CAPITAL_AD...	CREDIT_TO...	INFLATION	MOMO	REAL_INTEREST_RATE
-0.002860	-0.591306	0.731268	0.151839	0.055863	0.001317	-0.021386
-0.072421	0.234975	-0.433751	0.102765	-0.257649	-0.000573	-0.008562
-0.000852	0.018205	0.800385	0.521595	0.037174	-0.000160	0.019088
0.064309	-0.281792	-0.182687	0.173827	-0.030008	0.000751	0.013876
0.009536	-0.005646	-0.021776	-0.076851	-0.221336	-7.75E-05	0.054453
-0.027586	0.191238	0.214033	0.003335	-0.132473	-0.000909	-0.044617
0.004922	0.112882	0.150080	0.029850	-0.084798	0.000201	-0.100006

Unrestricted Adjustment Coefficients (alpha):

D(PER_CAPI...	D(BANK_AS...	D(CAPITAL...	D(CREDIT_T...	D(INFLATION)	D(MOMO)	D(REAL_INT...
3.294160	3.442618	-0.968988	-2.744248	-0.816729	-0.084189	-0.269887
0.231137	-0.013610	-0.269462	-0.039289	0.417784	-0.075070	-0.173053
-0.264754	0.279784	-0.005481	0.112118	-0.091125	-0.042219	-0.047695
0.109584	-0.676962	-0.483329	-0.380635	0.064047	0.049447	0.048743
-0.093996	0.424034	-0.347702	0.194610	0.273338	0.119037	0.056871
-145.0847	-119.0014	20.96749	-23.22089	176.1138	-42.79220	-58.56108
0.056009	0.152847	0.308177	0.428685	-0.732671	0.359775	0.100988

1 Cointegrating Equation(s): Log likelihood -1149.808

Normalized cointegrating coefficients (standard error in parentheses)

PER_CAPITA...	BANK_ASSE...	CAPITAL_AD...	CREDIT_TO...	INFLATION	MOMO	REAL_INTEREST_RATE
1.000000	206.7783	-255.7226	-53.09766	-19.53499	-0.460623	7.478680
	(44.5264)	(85.7714)	(41.6302)	(24.1445)	(0.10827)	(8.79425)

Adjustment coefficients (standard error in parentheses)

D(PER_CAPI...	-0.009420	(0.00459)
D(BANK_AS...	-0.000661	(0.00080)
D(CAPITAL...	0.000757	(0.00036)
D(CREDIT_T...	-0.000313	(0.00080)
D(INFLATION)	0.000269	(0.00069)
D(MOMO)	0.414886	(0.32810)
D(REAL_INT...	-0.000160	(0.00142)

Vector Error Correction Estimates

Date: 09/26/22 Time: 17:01
 Sample (adjusted): 2007Q4 2021Q4
 Included observations: 57 after adjustments
 Standard errors in () & t-statistics in []

Cointegrating Eq:	CoIntEq1
PER_CAPITA_GROWT...	1.000000
BANK_ASSET_TO_GDP...	194.0844 (32.3722) [5.99541]
CAPITAL_ADEQUACY...	-240.0011 (59.8370) [-4.01091]
CREDIT_TO_PRIVATE...	-49.97714 (28.4978) [-1.75372]
INFLATION(-1)	-18.17110 (15.8449) [-1.16147]
MOMO(-1)	-0.432281 (0.07881) [-5.49918]
REAL_INTEREST_RAT...	7.028187 (6.35103) [1.10682]
C	1883.684

Error Correction:	D(PER_CAP...	D(BANK_AS...	D(CAPITAL...	D(CREDIT...	D(INFLATION)	D(MOMO)	D(REAL_IN...
CoIntEq1	-0.015008 (0.00639) [-2.34983]	-0.001046 (0.00111) [-0.94581]	0.001201 (0.00050) [2.42251]	-0.000491 (0.00114) [-0.43074]	0.000423 (0.00098) [0.43155]	0.681574 (0.45842) [1.44949]	-0.000254 (0.00201) [-0.12622]
D(PER_CAPITA_GROW...	0.058001 (0.25725) [0.22547]	-0.009932 (0.04456) [-0.22291]	-0.006571 (0.01997) [-0.32912]	0.002510 (0.04594) [0.05483]	-0.000315 (0.03948) [-0.00798]	-7.124736 (18.3886) [-0.38750]	-0.003158 (0.08115) [-0.03892]
D(PER_CAPITA_GROW...	0.058001 (0.25725) [0.22547]	-0.009932 (0.04456) [-0.22291]	-0.006571 (0.01997) [-0.32912]	0.002510 (0.04594) [0.05483]	-0.000315 (0.03948) [-0.00798]	-7.124736 (18.3886) [-0.38750]	-0.003158 (0.08115) [-0.03892]
D(BANK_ASSET_TO_G...	0.986336 (2.15109) [0.45853]	-0.107749 (0.37257) [-0.28920]	-0.103303 (0.18696) [-0.61874]	0.040004 (0.38411) [0.10415]	-0.011133 (0.33011) [-0.03372]	-101.1739 (153.747) [-0.65805]	-0.035589 (0.67861) [-0.05244]
D(BANK_ASSET_TO_G...	0.986336 (2.15109) [0.45853]	-0.107749 (0.37257) [-0.28920]	-0.103303 (0.18696) [-0.61874]	0.040004 (0.38411) [0.10415]	-0.011133 (0.33011) [-0.03372]	-101.1739 (153.747) [-0.65805]	-0.035589 (0.67861) [-0.05244]
D(CAPITAL_ADEQUAC...	-1.330328 (2.84791) [-0.46712]	-0.174259 (0.49326) [-0.35328]	0.095187 (0.22104) [0.43063]	-0.039980 (0.50854) [-0.07862]	0.045190 (0.43704) [0.10340]	32.01054 (203.552) [0.15726]	-0.046698 (0.89844) [-0.05198]

D(CAPITAL_ADEQUAC...	-1.330328 (2.84791) [-0.46712]	-0.174259 (0.49328) [-0.35328]	0.095187 (0.22104) [0.43063]	-0.039980 (0.50854) [-0.07862]	0.045190 (0.43704) [0.10340]	32.01054 (203.552) [0.15726]	-0.046698 (0.89844) [-0.05198]
D(CREDIT_TO_PRIVAT...	0.017223 (1.29264) [0.01332]	-0.057714 (0.22389) [-0.25778]	-0.009516 (0.10033) [-0.09485]	0.003140 (0.23082) [0.01380]	0.005077 (0.19837) [0.02559]	-20.01409 (92.3901) [-0.21663]	-0.017166 (0.40779) [-0.04209]
D(CREDIT_TO_PRIVAT...	0.017223 (1.29264) [0.01332]	-0.057714 (0.22389) [-0.25778]	-0.009516 (0.10033) [-0.09485]	0.003140 (0.23082) [0.01380]	0.005077 (0.19837) [0.02559]	-20.01409 (92.3901) [-0.21663]	-0.017166 (0.40779) [-0.04209]
D(INFLATION(-1))	0.435817 (1.21585) [0.35845]	0.085001 (0.21059) [0.30867]	-0.030090 (0.09437) [-0.31886]	0.012752 (0.21711) [0.05873]	-0.015551 (0.18659) [-0.08335]	-7.900473 (86.9018) [-0.09091]	0.017643 (0.38357) [0.04600]
D(INFLATION(-2))	0.435817 (1.21585) [0.35845]	0.085001 (0.21059) [0.30867]	-0.030090 (0.09437) [-0.31886]	0.012752 (0.21711) [0.05873]	-0.015551 (0.18659) [-0.08335]	-7.900473 (86.9018) [-0.09091]	0.017643 (0.38357) [0.04600]
D(MOMO(-1))	-0.001329 (0.00675) [-0.19677]	-0.000895 (0.00117) [-0.59371]	2.32E-05 (0.00052) [0.04427]	-1.72E-05 (0.00121) [-0.01425]	9.43E-05 (0.00104) [0.09096]	-0.138125 (0.48278) [-0.28610]	-0.000201 (0.00213) [-0.09427]
D(MOMO(-2))	-0.001329 (0.00675) [-0.19677]	-0.000895 (0.00117) [-0.59371]	2.32E-05 (0.00052) [0.04427]	-1.72E-05 (0.00121) [-0.01425]	9.43E-05 (0.00104) [0.09096]	-0.138125 (0.48278) [-0.28610]	-0.000201 (0.00213) [-0.09427]
D(REAL_INTEREST_R...	0.248262 (1.08543) [0.22872]	-0.189852 (0.18800) [-1.00987]	-0.048479 (0.08425) [-0.57545]	0.017185 (0.19382) [0.08866]	0.012563 (0.16657) [0.07542]	-78.65020 (77.5801) [-1.01379]	-0.057178 (0.34242) [-0.16698]
D(REAL_INTEREST_R...	0.248262 (1.08543) [0.22872]	-0.189852 (0.18800) [-1.00987]	-0.048479 (0.08425) [-0.57545]	0.017185 (0.19382) [0.08866]	0.012563 (0.16657) [0.07542]	-78.65020 (77.5801) [-1.01379]	-0.057178 (0.34242) [-0.16698]
C	-0.397252 (2.39151) [-0.16611]	0.948144 (0.41421) [2.28904]	0.166675 (0.18562) [0.89742]	-0.055674 (0.42704) [-0.13037]	-0.080941 (0.36700) [-0.22054]	336.4420 (170.931) [1.96829]	0.282428 (0.75446) [0.37435]
R-squared	0.118697	0.079803	0.129509	0.004608	0.005274	0.083280	0.002099
Adj. R-squared	-0.203730	-0.256854	-0.188963	-0.359559	-0.358650	-0.252106	-0.362987
Sum sq. resids	7012.506	210.3837	42.24350	223.5959	165.1478	35823817	697.9044
S.E. equation	13.07810	2.265132	1.015051	2.335286	2.006986	934.7468	4.125780
F-statistic	0.368136	0.237048	0.406657	0.012654	0.014493	0.248311	0.005750
Log likelihood	-218.0329	-118.0944	-72.34087	-119.8330	-111.1975	-461.3851	-152.2729
Akaike AIC	8.211680	4.705067	3.099680	4.766070	4.463070	16.75035	5.904311
Schwarz SC	8.785168	5.278558	3.673168	5.339558	5.036558	17.32384	6.477800
Mean dependent	0.034737	0.517895	0.068421	-0.021404	-0.049649	166.9377	0.153333
S.D. dependent	11.92010	2.020464	0.930902	2.002815	1.721831	835.3597	3.533949
Determinant resid covariance (dof adj.)		2.66E+09					
Determinant resid covariance		2.65E+08					
Log likelihood		-1118.900					
Akaike information criterion		43.43510					
Schwarz criterion		47.70041					
Number of coefficients		119					