UNIVERSITY OF GHANA

COLLEGE OF HUMANITIES

ASSESSING THE CRITICAL DETERMINANTS OF PERFORMANCE OF MICROFINANCE INSTITUTIONS IN GHANA

BY

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THIS THESIS IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON, IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF BUSINESS ADMINISTRATION (M.B.A.) DEGREE IN FINANCE

MAY, 2019
DECLARATION

I, RAHEAL YUSIF hereby declare that this thesis is the original research undertaken by me under the guidance of my supervisor. Neither the whole nor a part of this thesis has been presented for another degree elsewhere. All references used in this work have been accordingly acknowledged.

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RAHEAL YUSIF DATE

(10636282)
CERTIFICATION
I hereby certify that this thesis was supervised in accordance with procedures laid down by the University.

I declare that I have supervised the above student in undertaking the study reported herein and confirm that she has my permission to submit it for assessment.

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DR. AMIN KARIMU                              DATE

(SUPERVISOR)
DEDICATION
I dedicate this thesis to my mum, Hajia Muniratu Braimah, my dad, Alhaji Yakubu Seidu Yusif and my siblings. Thank you for your support and prayers.
ACKNOWLEDGEMENTS
My greatest gratitude goes to the Almighty Allah for seeing me through this programme successfully.

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<tr>
<td>GHAMP</td>
<td>Ghana Microfinance Policy</td>
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<tr>
<td>RCBs</td>
<td>Rural and Community Banks</td>
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<td>FNGO</td>
<td>Financial Non-Governmental organisation</td>
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<td>GPRS</td>
<td>Ghana Poverty Reduction Strategy</td>
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<td>IFRI</td>
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<td>MFIs</td>
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<tr>
<td>ROA</td>
<td>Return on Assets</td>
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<td>ROTA</td>
<td>Return on Total Assets</td>
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<td>ROE</td>
<td>Return on Equity</td>
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<td>CAR</td>
<td>Capital Adequacy Ratio</td>
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<td>EBIT</td>
<td>Earnings before Interest and Tax</td>
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<td>NPA</td>
<td>Non-Performing Assets</td>
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<td>NPL</td>
<td>Non-Performing Loan</td>
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<td>CIR</td>
<td>Cost to Income Ratio</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>IF</td>
<td>Inflation</td>
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<td>TL</td>
<td>Total Loans</td>
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<td>FEM</td>
<td>Fixed Effect Model</td>
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<td>REM</td>
<td>Random Effect Model</td>
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<tr>
<td>VIF</td>
<td>Variance Inflation Factor</td>
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<td>BOG</td>
<td>Bank of Ghana</td>
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ABSTRACT

This study empirically examines the determinants of microfinance performance as well as the influence of microfinance financial performance on its social performance (outreach) in Ghana. The research used data for 165 Ghanaian microfinance institutions (MFIs) over the period 2014-2018. The research employed the fixed effect estimation technique in estimating the model as suggested by the Hausman test. Taking unobserved firm and year heterogeneity and correcting for heteroskedasticity and serial correlation, the study found factors such as capital adequacy ratio, firm’s cost, firm’s interest rate and inflation, to be significant determinants of microfinance performance, with CAR and firm’s cost having a negative effect on performance; interest rate and inflation having a positive effect on performance of MFIs in Ghana. The study also found a negative and significant relationship between return on assets (ROA) and firm size (total assets), with firm size being used as a proxy for measuring MFIs outreach. The study concludes that capital adequacy ratio, firm cost incurred, firm interest rate and inflation are significant determinants of microfinance performance in Ghana, and that MFI that are performing better financially tend to have less outreach to the poor.
CHAPTER ONE
INTRODUCTION

This section provides the background of the research, the problem statement, objectives and research questions, in addition to discussing the relevance of the research and presents the scope, limitation and chapter outline of the entire research.

1.1 Background of the study

Microfinance institutions (MFIs) have transformed gradually to become a means for economic development aimed at benefiting low-income people (Kinde, 2012). MFIs also play a key part in poverty reduction by giving the poor access to credit to start business (Tehulu, 2013). In addition to providing credit facility, they meet the credit needs of the unserved and underserved as a way of ensuring financial inclusion and to also meet development objectives such as job creation, women empowerment, help small businesses grow among others. The microfinance industry, aside being a key component of the financial system, is a critical strategy for reducing poverty in developing countries (World Bank, 2002).

However, for MFIs to be able to make a positive impact on the nation and enhance the welfare of the poor, sustained good financial performance and outreach are a necessary condition. Financial performance of MFIs has been a topical issue globally due to the MFIs’ significance in achieving poverty reduction. Schreiner (2000) argued that MFIs that are financially unsustainable will not survive to make any meaningful impact on poverty reduction. It may also aggravate the economic plight of those they serve when MFIs collapse. Furthermore, Parker, Easton, & Klein (2000) suggested that unless we assess the financial performance of MFIs and which determinants play a crucial role in ensuring MFIs achieve good sustainable financial
performance, their ability to assist in poverty reduction, diversify the income of the people and improve quality of life will only be a mere wish.

In Ghana, recent happenings in the banking sector have drawn much attention to the performance of MFIs and their ability to meet any legal requirements stipulated by the Bank of Ghana (BOG). Investors and donor agencies are also interested in the contributing factors that underpin sustainable financial performance of MFI and how they can contribute to make maximum impact on bettering the standard of living of the poor in the country. For instance, a report by UNCDF (2008) indicated that only 10% of the potential demand for credit by the poor is reached by MFIs in Ghana. This suggests that MFIs need to be financially sustainable to be able to increase credit to the poor in the country. Also, unlike the commercial banks, MFIs have low earnings due to regulatory restrictions (Appiah, Asamaoh and Narkotev, 2015) and the need for MFIs to focus on helping the country reduce or eliminate poverty by giving credit and other economic empowering activities.

This work examines the determinants of performance of MFIs in Ghana given that limited research has been done in this area. It also examines empirically whether the achievement of social-outreach affects the performance of MFIs in a developing economy like Ghana. Literature on the trade-off between financial performance and social-outreach of MFIs has produced mixed results. Whilst some researchers believe that both financial performance and outreach can be achieved concurrently, others are of the view that achieving one involves sacrificing the other. In this study, the research seeks to examine MFIs to gather evidence on whether increasing financial performance impacts social outreach of these institutions.
1.2 Statement of the Problem

MFIs are growing in Ghana and there is a concern for the financial sustainability of this increasing number of MFIs. This is because good sustainable performance is necessary to ensure that MFIs reach a substantial number of poor people, small business. In spite of the numerous benefits and the significant role MFIs play in the economy there are still strong indication that MFIs are characterized with high default rate, high interest on loans and competition from other financial institutions. Thus, the issue of what determinants of financial performance relates to MFI in Ghana remains an under researched area. Prior studies in Ghana emphasize on the social performance and the measurement of financial performance. However, the determinants of financial performance, which will ensure MFIs stay in business, withstand the strong competition from other players in the financial sector and meet increasing pressure from BOG, are yet to be investigated in Ghana.

Also, recent research into MFI performance argues that there is a net-off between achieving good financial performance and increasing social-outreach. Whilst some researchers contend that MFIs must necessarily trade-off one in order to achieve the other, another set of researchers believe that increasing outreach comes with cost and this affects the financial performance of MFIs. This work also seeks to investigate whether in the case of a Ghana, social outreach impacts financial performance.
1.3 Purpose of the Study

The reason for this research is to investigate the determinants of financial performance of MFIs and how financial performance affects social outreach.

1.4 Objectives of the Study

The specific objectives of the study are:

1. To examine the determinants of financial performance of MFIs in Ghana.
2. To investigate the effect of financial performance of MFIs in Ghana on their social outreach.

1.5 Research Questions

Below are the questions this research seeks to find answers to:

1. What are the determinants of financial performance of MFIs in Ghana?
2. What is the effect of the financial performance of MFIs on social outreach in Ghana?

1.6 Methodology

Quantitative research approach will be employed in this research. The population for the study is all licensed MFIs in the country. A sample size of at least hundred (100) microfinance institutions across Ghana is selected randomly and also based on consistency in submitting prudential reports. Panel data on microfinance institutions from Bank of Ghana will be used for the purpose of this research.

The period used will be from 2014 to 2018 (5 year period), giving a total of at least 500 observations. The selection of this period is because though the BOG begun the process of regulating MFIs in 2011, submission of prudential returns and effective regulation begun in 2013
but took shape in 2014. Also, the ‘Ghanaian financial crisis’ escalated within this period. In the year 2015, was the collapse of some microfinance institutions, notable among them was the DKM Diamond Microfinance Limited and Noble Dream Microfinance Limited. In 2017 was the dissolution of UT Bank and Capital Bank and in 2018, was the consolidation of five major banks into Consolidated Bank Ghana, as well as the issue of the close down of Menzgold Ghana Limited, which have all hit hard the financial sector in Ghana.

Multiple regression is employed to evaluate the influence of the predictive variables on financial performance of microfinance institutions in Ghana. Return on Asset (ROA), Return on Equity (ROE) and Net Profits are used as dependent variable for financial performance. The explanatory variables are capital adequacy ratio (CAR), the size of the microfinance institution (firm size), quality of loan portfolio (NPL ratio), Deposits, Age of institution (Age), regulation (BOG visits), cost to income ratio (cost) and firm interest rate (interest), which is the annual lending rate of institution.

For outreach the independent variables will include; Number of Borrowers (B), Total Loans (TL) and size of the microfinance institution (firm size). ROA and ROE would be used as the main dependent variables. The control variables will include capital adequacy ratio (CAR), quality of loan portfolio (NPL ratio), Deposits, Age of institution (Age), regulation (BOG visits), cost to income ratio (cost) and firm interest rate (interest), which is the annual lending rate of institution.

1.7 Significance of the Study

This work contributes to policy by identifying the determinants of financial performance that can be concentrated on by the regulator for monitoring the financial performance of MFIs. For contribution to academic research, this study provides empirical evidence from a developing economy in the sub-Saharan region, which hitherto did not exist, on whether increasing social
outreach affects financial performance of MFIs. This will either validate or offer alternative to the MFI performance trade-off debate. Lastly, the study contributes to practice by highlighting to investors and the institutions the key determinants of financial performance they should consider before investing in MFIs.

1.8 **Scope of the study**

The focus of this research is on MFIs due to the current happenings in the Ghanaian financial sector with the regulatory reforms leading to the taking-over, consolidation and down grading of some commercial banks, which may trickle down to MFIs in the country. Also focus is on Microfinance Institutions due to the importance of these institutions in providing financial inclusion for the semi-formal and informal sectors, which in one way or the other have been neglected by commercial banks. A sample size of not less than hundred (100) microfinance institutions over a five (5) period will be used. MFIs not licensed will not be included in this study since it will be difficult to collect data on them.

1.9 **Chapter Organization**

The research work is arranged into six main chapters. Chapter one covers the introduction to the study which includes the study’s background, statement of the problem, research objectives and questions, importance of the research as well as the scope and limitation of the study.

Chapter two covers the overview of microfinance and its regulations which includes the historical of microfinance institutions in Ghana, regulation of microfinance institutions in Ghana, role of microfinance institutions and poverty alleviation in Ghana, current statement of microfinance institutions in Ghana as well as problems in the microfinance sector in Ghana.
Chapter three embodies the literature review, where various literature in relation to financial sector reforms and issues, critical success factors of microfinance Institutions, microfinance performance evaluation: Welfarists vs. Institutionists, review of empirical studies on the determinants of performance of Microfinance Institutions as well summary of the literature.

Chapter four covers the research methodology, which includes the research approach design, data source and description, model specification, variables and diagnostic tests.

Chapter five discusses the results of the data analysed as well as its relation to existing literature.

Chapter six, which is the final part, contains the summary of the study and its implication for research and practice, as well as recommendations and conclusion of the study. After which references and appendices of the study are attached.
CHAPTER TWO
OVERVIEW OF MICROFINANCE IN GHANA AND ITS REGULATION

2.1 Historical Development of MFIs in Ghana

Peoples’ practice of saving and/or taking small credit from individuals and groups as a means to fund their small retail business or farming has always been widespread in our part of the world. Susu, which is the earliest form of deposit mobilisation, emerged in Ghana in the early 1900s from Nigeria where it originated. The microfinance sector in Ghana has transformed over the years and thrived as a consequence of government undertaking different sector policies and programmes that has created an enabling environment for MFIs to thrive. An example is the implementation of the Ghana Microfinance Policy (GHAMP) and the formation of the Agricultural Development Bank to support the agricultural sector of the economy.

According to a World Bank report in 2016, the microfinance sector saw rapid growth during the 2000s. This resulted in an increase in financially inclusion from 1.3million people to 8million people at the end of 2013. Even though the Bank of Ghana (BOG) was not regulating all these institutions, the presence of strong oversight and monitoring from microfinance associations and donor support programs as well as capacity building ensured growth of the sector was stable. However, in the late 2000s the springing up of more unregulated MFIs caused a system disruption characterised by insolvency, increased fraud and loss of savings by these low-income savers. BOG in 2011, issued guidelines aimed to bring all types of MFI under a common regulatory framework.
2.2 MFIs in Ghana and its Regulation

Historically, microfinance business was in two forms; Susu (deposit mobilisation) and Money Lending (credit). When it all started, moneylenders were given the license to start business under the Moneylenders Ordinances (Cap. 176) of 1940 and 1957. Under this ordinance the Ghana Police Service was the only body with the mandate to licence moneylenders. While the Ghana Susu Collectors Association (GSCA) regulated the activities of Susu Collectors.

Microfinance Institutions (MFI) transformed into institutions that mobilised deposits and granted credit simultaneously in the year 2008. However, these transformed institutions lacked the necessary intermediation skills and licensing. On 23rd June 2010, a stakeholder’s workshop was organised by the Ministry of Finance to evaluate a report on the regulation and supervision of MFIs. The outcome of the workshop resulted in the birth of a separate supervision office within the Supervision Department of BOG purposely to supervise the rapidly growing MFI sector.

With the rising number of MFIs in the country, coupled with no supervision and the rate at which these MFIs were mobilising deposits, the BOG in June 2011 begun the regulation of MFIs in the country. The purpose of the central bank’s action was to regulate the activities of these MFIs, streamline their operations to meeting the objective of poverty alleviation, growth and financial inclusion, provide support for the microfinance sector (technical and financial) and ultimately help manage the risk associated with microfinance sustainability and protection of depositors’ funds.

To strengthen its regulatory processes, BOG in 2013 established a fully-fledged department (Other Financial Institutions Supervision Department) to supervise Rural and Community Banks (RCBs), MFIs together with Forex Bureaux. Initially, the staff strength was twelve (12) and they were tasked with the licensing and examination of MFIs. Currently the department has over one
hundred and twenty (120) staff with four (4) main offices; namely, Licencing and Resolution, Policy and Regulation, Rural Examination and Microfinance Examination.

The Banks and Specialised Deposits-Taking Institutions Act 2016 (Act 930), the Non-Bank Financial Institutions Act 2008 (Act 774) and the Business Rules and Sanctions for MFIs are currently the regulatory documents for MFIs in the country.

In Ghana, microfinance activities are structured as follows: Tier 1; Rural and Community Bank (minimum capital of GH¢1 million), Tier 2; Deposit-Taking MFI (minimum capital of GH¢2 million), Tier 3; Non-Deposit Taking MFIs (minimum capital of GH¢2 million), Financial Non-Governmental Organisations (FNGOs) (minimum capital of GH¢300,000.00) and Tier 4; Individual Susu Collectors and individual Money Lenders (no minimum capital requirement).

2.3 Microfinance and its Role in Poverty Reduction in Ghana

Baten (2009) defines Microfinance as "the provision of a broad range of financial services such as deposits, loans, payment services, money transfers, and insurance to poor and low-income households and, their microenterprises". Thus, microfinance is a key contributor to poverty reduction and job creation in an economy. UNDP Human Development Report (1991 cited in Aborh, 2011) asserted that “there is no doubt that microfinance has become one of the fast growing sectors in Ghana”.

The government of Ghana over the years has come up with policies aimed at poverty reduction in the country. In 1995, it presented the Ghana: Vision 2020, which aimed at ensuring the nation achieves middle-income status in twenty-five years. The Ghana Poverty Reduction Strategy (GPRS) whose main objective is “to eliminate widespread poverty and growing income inequality, among the productive poor who constitute majority of the working population”
followed this. The year 2000 population and housing census revealed that 80% of the employed population were in the informal sector, who were typified by inability to obtain credit resulting in the slow transformation and growth of that part of the Ghanaian economy. It is of no doubt that access to financial services by this sector cannot be over emphasised, as it is vital for its growth. Providing financial services to this sector facilitates the mobilisation of excess liquidity through savings, which is a source of capital investment for the national development (Bank of Ghana, 2007).

2.4 The Microfinance Sector in Ghana and Problems Faced

Ghana has recently experienced some banking crisis, which, has also affected the Microfinance sub-sector. “The extent of the potential distress in this sub-sectors are characterised by severely impaired capital; failure to meet regulatory capital adequacy requirement; generally poor asset quality and liquidity challenges. Out of the total number of 566 licensed MFI s in 2018, 211 are active but distressed or folded up. 272 out of the 707 institutions in the sub-sector, representing 38.5% are at risk. This indicates that, approximately GH₵740.5 million will be owed to an estimated 705,396 depositors of the MFI s and RCBs which were distressed and folded up. In terms of significance, the deposits under distress form 8.81% and 52.49% of industry total deposits of RCBs and MFI s respectively” (Bank of Ghana, 2018). A careful look at the deposit under distress shows MFI s have the largest percentage. Hence, the need for this work to assess the determinants of performance of MFI s in Ghana.
CHAPTER THREE
LITERATURE REVIEW

3.1 Introduction
Prior literature and empirical evidence related to this research are reviewed in this chapter. The sections of this chapter include: financial sector reforms and issues, critical success factors of microfinance institutions, microfinance performance evaluation: Welfarists vs. Institutionists, review of empirical studies on the determinants of performance of microfinance institutions and summary of literature review.

3.2 Financial Sector Reforms and Issues
The works of McKinnon (1973) and Shaw (1973) are well known for providing theoretical basis for financial reforms as it showed that policies on the financial sector in countries with emerging economies had resulted to financial repression. In their work a strong argument was developed for financial sector liberalisation as a laudable policy response that would augment its role in mobilising and raising the level of savings and investment and ultimately economic growth in developing countries. Developing countries in earlier times had the state heavily involved in economic activity and the strategy of import substitution. The state was practically administering interest rates and owned most financial institutions.

Consequently, financial reforms have resulted in several benefits of which studies by Fischer (1993), Cho and Khatkhate (1989) and Gelb (1989) in a World Bank paper have identified. Resulting in the improvement of the level of financial savings and providing a wider range of accessible savings instruments, which create the possibility of higher returns. This would go ahead to lower the risk of holding financial securities, creating more liquidity, leading to higher savings mobilisation and investment. Fry (1988) in a study also established the reflection of the
relative scarcities of interest rates and exchange rates, the stimulation of savings and efficient
discrimination between alternative investments as some benefits of financial liberalisation and
financial deepening.

To every benefit however, there are limitations. In a study by Harris (1996) and Killick and
Martin (1989), most developing countries undertook financial reforms just about the same time
when they were undergoing macroeconomic stabilisation, which resulted in high nominal
lending rates and a redirection of financial flow to government. “The structural characteristics of
many developing countries make the financing of high-yielding government securities and self-
liquidating import transactions more attractive” (Harris, 1993). This may not necessarily be as a
result of financial reforms but rather a consequence of unsound macroeconomic policies of these
countries with emerging economies (Harris, 1996) Hence the need for state to cut down on its
demand for credit and establish appropriate policies on exchange rates. If not financial liberation
would only result in the redistribution of financial resources to the government and in favour of
imports. This was evident in Ghana between the periods of 2008 and 2016 in which Treasury bill
rates were so good that even banks invested large amount of their mobilised deposits into
treasury bills rather than creating loans, which had a higher probability of default.

3.3 Critical success factors of microfinance Institutions

Factors that are essential in terms of contributing to the sustainability and growth of MFI s are
known as critical success factors. There is no consensus among researchers on what set of factors
are considered critical for the success Microfinance Institutions. For example, Sharma and Zeller
(1997) and Yaron (1994) suggest that the success of MFI s lies in their ability to adopt strategic
credit policies. Others too believe that institutional development beyond the provision of credit
can make MFI s successful (Aveh, Krah and Dadzie, 2013). Some top microfinance institutions
like the Grameen Bank, which originated in Bangladesh have been tested and proven overtime and most MFIs look up to it as a role model of microfinance, thus, imitate its success factors. Al Mamun in 2012 in a study concluded that “the success factors of the Grameen Bank includes innovations such as design and implementation of policies like group-based lending, the collateral free lending system, peer group monitoring system and well-trained and dedicated staff. In addition, the bank motivates its staff members and borrowers through providing a well-designed incentive system for staff, allocation and mobilization of resources and encouragement of the borrowers to be financially independent”.

Woller and Woodworth (2001) emphasized that, government needs to play its role of creating conducive macroeconomic environment for MFI to flourish. There is the need for stability of growth, fiscal discipline and low inflation. Also, an effective and efficient regulatory framework is needed for MFIs to be successful in their role of financial intermediation (Armendariz and Morduch, 2004). Therefore, the success of MFIs depends on government and regulatory framework within which they operate. To lay more emphasis on the role of government and the regulator in the success of MFIs, Hubka and Zaidi (2005) in a study find “that government affect the success of MFIs by eliminating unfair competition from public institutions, undertaking overall regulatory reform, and improving the overall business environment”. This goes to support the study conducted by Woller and Woodworth (2001) and Armendariz and Morduch, (2004).

As enumerated in Kiweu (2010), the study by Chen (1999) identified the critical success factors as; “strength of bank operation management, strength of bank marketing, ability to develop bank trademarks and strength of financial market management”.

As cited in Zeller and Meyer (2002), the International Food Policy Research Institute (IFPRI) supported a survey that sort to evaluate the success of innovative approaches in MFIs. This was
to help ascertain when national investments in microfinance programs may improve living standards of the poor. This resulted in the birth of the concept of the “critical triangle of microfinance”. The critical triangle of microfinance posits that MFIs must simultaneously manage **outreach, financial stability and impact** if they are to be successful.

In measuring the critical success factors of MFIs, Aveh, Krah and Dadzie (2013) assert that seven main factors are used. These are number of clients of MFI, loan processing effectiveness, proper record keeping, incentives (savings/discounts) given to customers, auditing, employee remunerating and staff turnover. This is in sharp contrast to the findings of other researchers like Yunus (1997) who puts forward that the critical success factors borders on outreach, financial stability and impact. All these varying views on which factors are critical to the success of MFIs underscore the need for researchers to incorporate into their studies the geographical differences and economic settings within which each MFI finds itself. The success factors of an MFI in a developed or emerging economy may not necessarily be the same as MFIs in poor or underdeveloped economies.

3.4 Microfinance Performance Evaluation: Welfarists vs. Institutionists

“Microfinance is the provision of a broad range of financial services such as deposits, loans, payment services, money transfers, and insurance to poor and low-income households and their micro enterprises” (Baten, 2009). This therefore results in poverty alleviation and job creation. The evolution of microfinance has resulted in gradually narrowing the gap between formal institutions and the poor through the provision of some mechanisms intermediation of aggregating transactions and reducing transaction costs (Sriram, 2005). This has saved the poor in society from the selfish interest of some unethical moneylenders who in the past were lending
to the poor at extremely high interest rates as they were their only source of capital, considering
the fact that the formal banking sector was unwilling to lend to these poor people without any
form of collateral backing.

In microfinance literature, there are two main schools of thought dominating the discussion on
assessing what the actual objective of microfinance is. These are the Welfarists and the
Institutionists (Brau and Woller, 2004). Microfinance since its initial commencement in
Bangladesh in the 1970s, has well known as accepted as poverty alleviation tool, developed and
delivered by private persons outside formal markets. Microfinance Institutions (MFIs) around the
world are usually supported by the government or donors and also funded through highly
subsidized loans (soft loans). Some schools of thought (Institutionists) believe this results in the
lack of institutional viability of these microfinance institutions. They argue that this goes a long
way to affect their sustainability as subsidised loans or loans granted from donor funds are less
likely to perform as compared to loans raised from depositors’ funds. Hollis and Sweetman
(1998) in their work came up with a conclusion that supports the above argument.

However, another school of thought (Welfarists) believes otherwise, that even without financial
self-sufficiency, microfinance institutions’ sustainability can still be achieved (Morduch (2000),
Woller, Dunford and Warner (1999)). They view these donations as a form of contribution to
ownership, thus making these donors social investors. Social investors are investors that invest
for the purpose of achieving intrinsic social satisfaction and not necessarily focusing on financial
returns. Hence in accessing the performance of these microfinance institutions, focus is therefore
on poverty alleviation by measuring the extent of social outreach and not so much on financial
gains.
Nonetheless, there is some evidence to show that MFIs that have become financially self-sufficient usually focus their attention on lending to clients who were a little below or above the poverty line in their various countries (Navajas et al., 2000). In so doing, these MFIs are presented with the opportunity to take advantage of economies of scale by granting larger loans to the not so poor in society. Though still an open question, this limited evidence caused many to conclude that if financial self-sufficiency is desired, then the very poor will not be reached by MFI services. That is, the MFIs will not be able to achieve enough depth to reach those who desperately in need of credit.

Apart from government grants, soft loans and donor funds, Microfinance Institutions that are already in operation rely on customer deposits (demand and time deposits, passbook savings, and certificates of deposits) for funding. A study by Hempel and Simonson (1999) reported that, “United States commercial banks total liabilities are made up of 97 per cent of demand deposits and time deposits”. Hence, agreeing to the fact that deposits form a major source of funding for financial institutions. This assertion was backed by Wisniwski in 1999.

Fehr and Hishigsuren (2006) grouped the sources of finance for MFIs into four stages: Stage I, representing the Start-up Stage, which is mainly financed by donor grants, soft loans and forced savings: Stage II, representing Operational Self-sufficiency and generally financed from all sources of finance in stage I in addition to commercial loans and guarantee funds: Stage III, which they termed as Financial Self- sufficiency, at this stage the MFI has matured and private debt capital available as a source of funding. Nonetheless, these debt structures are usually accompanied by restrictive covenants and most often than not, must have some form of guarantees attached: Stage IV is final stage and is termed Commercial Level Return of MFI evolution and as such conventional equity financing becomes the most suitable source of finance.
Microfinance sustainability and outreach are seen as two conflicting objects; with the rift between the two driven by information asymmetries and cost of transaction (Mosley and Hulme, 1996). Welfarists on one hand align with the social objective of MFIs relating to poverty alleviation, development of its clients, the promotion of use of donor funds and subsidised debts to achieve this purpose (Ejigu, 2009). The Institutionists on the other hand emphasise on the fact that donor funds are unreliable, hence the need for MFIs to extend financial services to customers at an increased cost so as to achieve financial sustainability.

3.5 Review of empirical studies on the determinants of performance of MFIs

3.5.1 Measuring Financial Performance
The financial performance of an entity is the potential earning capacity of a business as against its expenditure (Sanni, 2009). A commonly used indicator of financial performance is return on total assets (ROTA), which measures the overall earnings performance of a company as well as its efficiency with regards to asset utilization. This ratio is measured by comparing a firm’s earnings before interest and tax (EBIT) against its total assets. It is said to be an effective indicator of how efficiently firms use their assets to generate earnings before payments are made for contractual obligations. Hence this profitability ratio measures how well Microfinance Institutions are able to make smart choices on their expenditure on new assets. Here, optimal choice and efficient use of total asset base is expected to increase bank profitability (see Ansoff, 1965; Gale, 1972; Eda and Mehmet, 2009). Put simply, return on total asset is an indicator of the firms’ efficiency and effectiveness to generate profit from asset.

Another key measure of financial performance is Return on Equity (ROE), as investors use it to measure the amount of a company's income that is earned on shareholders' equity. There is the wide use of ROE along with return on assets (ROA), as a measure of corporate financial
performance and is considered as one of the all-time favourites (Rappaport, 1986). Monteiro (2006) also backed this by stating that ROE is perhaps the most critical ratio to be considered by an investor. ROE is popularly used among analysts, finance managers and equity holders alike due to the fact that ROE is a representation of the end result of structured financial ratio analysis, also called Du Pont analysis (Stowe, Pinto and McLeavey, 2002; Correia et al., 2003; Firer et al., 2004). The computation of ROE shows how effectively a corporation is generating profit from the money that investors have put into the business, which is calculated by the division of net income by shareholders' equity.

Profitability of banks (financial institutions) is generally expressed as an interaction of internal and external factors (William, 2003). The internal factors, also called bank specific determinants of profitability, are related to bank management (Kosmidou, 2008). On the other hand, the external variables reconcile the economic and legal environment that impact the operations of banks such as inflation, real GDP growth, cocoa prices, oil prices and gold prices (Sanni, 2009; Sufian and Habibullah, 2009). The internal determinants of bank/MFI profitability are discussed below:

a) Capital Adequacy Ratio (CAR)

This is the ratio of the bank’s capital to its risk weighted assets. Olalekan and Adeyinka (2013) note that adequate capital speaks to the amount of capital that is enough to absorb losses and prevent bank failure. Thus, a bank with a risky asset portfolio will need to have a high capital adequacy ratio to mitigate risk and maintain solvency. Central banks monitor the capital adequacy of banks to ensure they meet regulatory requirements. It also helps the regulatory body to check if any financial institution is at the risk of failure. The Basel committee on banking supervision requires banks to maintain a specified level of capital adequacy ratio at any point in
time. Gupta and Meera (2011) suggests a negative relationship between CAR and Non-performing Assets (NPA). This means that as CAR increases, NPA decreases. Kumar and Anjum (2017) examined the CAR of various banks in India in order to determine their solvency position. They collected data on five banks over the period from 2001 – 2002 and 2014 – 2015. Using parametric and non-parametric tools to analyse the data, the study finds that the level of CAR changed significantly among private and public-sector banks, but no change was observed among the foreign banks.

Ideally, CAR would have a positive relationship with profitability since banks that are adequately capitalised are less likely to face insolvency and better prepared for risks (Hassan and Bashir, 2003; Barathi Kamath, 2007). However viewing CAR from the conventional risk-return hypothesis, Microfinance Institutions with higher capital adequacy are perceived as relatively less risky. In effect the risk-return hypothesis postulates that lower risks would result in lower profitability. Thus, a there exists a possibility of an inverse relationship between capital adequacy and performance. Therefore, the relationship between capital adequacy and performance could go either ways; be it a positive or negative relationship. As Microfinance Institutions are involved in deposit-taking and issuing out loans, their capital adequacy one way or the other affects its level of financial performance.

b) Firm size (Total Assets)

Prior research on the relationship between firm size and profitability has generated varying views among researchers. Vijayakumar and TamizhSelvan (2010) in their study show that a positive relationship exists between the two. A sample of 15 companies was used in the study and the data from these firms were analysed using semi-logarithmic specification model. In terms of measures of firm size, sales and total assets were used. To assess profitability, profit margin and
profit on firm’s total assets were used in the study. Niresh and Thirunavukkarasu (2014) also carried out a study on “the impact of firm size on profitability of manufacturing firms in Sri Lanka.” Panel data from 2008 to 2012 were collected on 15 listed companies. Using correlation and regression techniques to analyse the data, the study finds that “there is no indicative relationship between firm size and profitability”. Lee (2009) focused on the determining whether or not firm size plays a role in profitability. Fixed effect model was used to analyse panel data collected on more than 7000 listed firms in the US. His study reveals that firm size had a significant impact on profitability.

The findings from these prior works assumes that causation is one directional, from firm size to profitability. Profitability can also cause firm size and evidence of this reciprocal causation has been well documented in the literature. For example, Anthony Enisan (2012) studied the nexus between firm size and profitability using panel data collected on 66 firms in Nigeria from 1999 - 2007. The findings of the study reveal that in the short-run, the causal relationship between firm size and profitability is a two-way street. In the long run, the relationship moves towards a steady state. Further findings from the study confirm that “firm size granger causes profitability and profitability granger causes firm size”.

c) Loan portfolio quality

Loan portfolio quality has been a topical issue in recent times in Ghana due to the recent steps taken by Bank of Ghana to sanitize the financial sector to ensure the country has a robust banking system that will support economic growth. The quality of loan portfolio affects profitability depending on performance of the portfolio. High non-performing loans (NPLs) will have a adverse effect on bank’s profitability whilst low non-performing loans portfolio will ensure sustained performance and profitability of banks. Kingu, Macha and Gwahula (2018)
studied on “the impact of non-performing loans on profitability”. The study used panel data (from 2007 – 2015) on 16 banks in Tanzania. Ordinary Least Squares regression was applied to the data, the results of the study shows a negative relationship exist between NPL and profitability. This means that as NPLs increase, it affects the banks interest income and as interest income decreases, the bank’s profit also decreases.

   d) Cost to income ratio (CIR)

This is the ratio of a company’s cost to its income. This ratio should be as low as possible so as to allow the bank to operate profitably and provide the best of customer service at reasonable cost. It used as one of the ratios to measure bank efficiency. Hence, the cost-income ratio of a bank sends signal to the investment community about how profitable the bank is. Changes in the ratio over a period of time have significant implication for companies. An increase in CIR means that operating costs are increasing faster than the growth in operating income. This may suggest that management is not being cost efficient. On the other hand, a fall in the CIR ratio means operating income is rising rapidly than costs. Management may be cutting down cost and it may also demonstrate how efficient management is in managing the flow of income.

The effect of CIR on profitability has been the subject of several studies with a majority of these studies confirming that there is a negative relationship between CIR and profitability. For instance, Mathuva (2009) examined the correlation between cost-income ratio and profitability over the period 1998 – 2007. The study used financial ratios and statistical tools for the analysis and the variables of profitability (ROA and ROE). The outcome of the analysis revealed that the association between cost-income ratio and profitability was a negative one.
The amount of deposits mobilised by banks undoubtedly has a major impact on the profitability of the banks. Deposits are a key resource for bank operations and in order to attract deposits, banks usually offer high interest on deposits. This results in an inverse relationship between deposits and profitability. Ferrouhi (2017) focused on the long-term determinants of Moroccan bank’s performance and the findings of the study suggest that deposits have a significant and positive effect on the performance of the banks. This is because the deposits collected by the banks are reinvested in loans and other investments to generate higher profits.

Previous studies have also determined the impact of external factors on bank performance. Some of the external factors identified include: regulation, inflation, and interest rate concentration among others. The banking industry is highly regulated by central banks in order to ensure a stable financial system for economic growth. New regulations and directives from the central bank can impact the operations especially legal restrictions on new entry can have significant impact on profitability (Mullineaux, 1978). Hooshyari and Moghanloo (2015) focused on evaluating the impact of inflation on profitability of banks. They used questionnaires and descriptive statistical tool methods to analyse panel data from 2010 to 2013. Inflation was established to influence profitability of banks. In contrast to Hooshyari and Moghanloo (2015), Kiganda (2014) sought to establish the effects of macroeconomic variables and bank profitability. Annual data ranging from 2008 – 2012 on equity banks was obtained and analysed using Ordinary Least Square regression. Findings from the study show that macroeconomic factors such as real GDP, inflation, and exchange rate have insignificant influence on bank performance.
Since microfinance institutions have similar characteristics with banks, the above internal and external determinants of the performance of banks would be tested with focus on deposit-taking microfinance institutions. Due to the existence of scant research in this area on what accounts for the determinants of financial performance of MFIs located in different economies, this study offers the opportunity to critically assess the internal factors and some controlled external factors that influence the financial performance of MFIs in an emerging economy like Ghana. The findings thereof will allow future researchers to carry out a comparative study on the differences in determinant of financial performance between MFIs in developing economies and developed economies.

3.5.2 Measuring Social Performance
The business model for MFIs is mainly to provide the financing needs of the poor who are usually ignored by the formal financial system. This main (social) mission is referred to as MFI’s outreach (Morduch, 1999). However, providing the financial needs of the poor by way of outreach is comparatively expensive in relation to the provision of financial services by commercial banks, which are usually targeted at the clients that are relatively wealthier. Most at times, these poor clients live and work in rural areas, making it more expensive to reach them with financial services, resulting in increased transaction cost. There is also the issue of clients not having the necessary collateral to back loans, which therefore increases the risks and cost for the MFIs.

The performance of microfinance institutions in terms of outreach is very important when assessing the impact microfinancing can make to reduce poverty and increase financial inclusion of the poor in society. Financial inclusion is defined by World Bank (2018) as “individuals, households and firms having access to financial products and services that help them to make
transactions, payments, collect savings and pension funds, and obtain credit and insurance”. The impact of increasing financial inclusion by microfinance institutions becomes greater as MFIs become more efficient in converting funds they obtain into financial products and service to deprived households. Thus, helping these deprived households to better manage the difficulty they face due to the gap between their low and highly unstable income on one hand and their daily basic need on the other (Collins et al., 2009)

The measure of social performance of microfinance institutions relates to social mission of MFIs, which is reaching out to the poor by providing credit facilities to individuals, households and small firms whose access to finance is that have limited. Schreiner (2003) studies that there are two dimensions to social performance of MFIs, which cover breadth and depth. With breadth being the coverage of MFI, determined by number of clients served by the MFI and depth being the type of clients served. The ratio of active female borrowers to the total number of active borrowers of an MFI and the average loan size divided by the GDP per capita of the country in which the MFI operates are the two most commonly used measures of depth. Focus is on female borrowers because they are generally seen to be among the poorest of the population and usually encounter difficulty in accessing credit from the formal banks. The second proxy measure is the average poverty level of clients taking the loan from the MFI, as it is estimated that the poor take small amounts of loan in relation to their levels of income. MFIs may however not be prepared to lend larger sums of money to poorer clients due to the possible risk of default as such loans usually have no collateral backing. In some instances, the number and size of deposits are used as a measure of outreach, thus for deposit taking MFIs. Other studies though minority, use geographical coverage as a measure of outreach by taking a percentage of clients living in rural
areas with the notion that most poor households live in rural areas. The determinants of social performance are discussed below:

a) Average loan size

Average loan size is computed as a ratio of the gross loans to the total number of borrowers and is a proxy for determining MFI outreach. Schreiner (2002, p. 8) argued, “along each dimension of size, smaller amounts or shorter times usually mean greater depth because as clients are poorer, they are less able to signal their risk to lenders, and so they get smaller loans to reduce the exposure of the lender to losses from default and must repay in more frequent instalments to allow the lender to monitor them”. Other researchers like Hatch & Frederick (1998) and Dunford (2002), however argue that loan size is a weak determinant as it is ineffective in attracting and selecting poor individuals since large size loans are unattractive and often unavailable to non-poor individuals due to higher interest rate and guarantee requirements.

Olivares-Polanco (2004) found a positive and significant relation between the ROA measure and the average loans size/GDP per capita 20% poorest measure. Consequently, the authors claimed to have found a trade-off between profitability and the depth of outreach. Mersland and Strøm (2010) found the same positive and significant relation between their average profit indicator and average loan size measure.

b) Number of borrowers

Most researchers in analysing the number of borrowers to determine the level of outreach of microfinance institutions focus more on number of active women borrowers. Studies
have shown that female borrowers are considered to be a majority of the poorest population and are usually excluded forms taking out loans from the formal banks.

c) Location

The geographical locations of MFIs also determine the level of outreach. MFIs exist to provide the financial needs of poor households and small-scale business. These individuals and businesses are usually located in the rural areas. There by using location as a determinant of outreach, gives an indication of the extent of social performance of MFIs.

3.6 Summary

This study seeks to assess the critical determinants of performance of MFIs and the performance indicators that should guide managers of these MFIs in making decisions. It seeks to analyse both financial and social determinants of MFI performance. The choice MFIs make concerning combinations of financial and social performance and the consequences that this has for their operations has been a subject of intense deliberation in the microfinance literature. This has become popularly known as the “trade off” discussion. The argument is on whether microfinance institutions can maintain their primary social objective of outreach and meeting the financial requirements of the poor whilst at the same time be financially sustainable (thus be able to make profits and not depend on donor funds or subsidies in the medium to long term). In literature on microfinance, researchers denote this so called “double bottom line mission” of improving the lives of the poor while being free from depending on donor support in the long run (Armendariz and Labie, 2011). Over the years this has led to “mission drift”, a term for MFI focusing so much on profitability that they tend to neglect their basic mission of social performance (Copestake, 2007; Armendariz and Szafarz, 2011; Mersland and Strøm, 2010).
There is however little literature on the possible determinants and consequences of both financial and social performance and the trade of amongst these two. There remains scattered knowledge on this issue especially in relation to a developing country like Ghana. It is evident from the review of prior literature that there is no consensus on the factors that determine the performance of MFIs. Some key performance determinants for MFIs was also discussed and prior work of other researchers have identified a number of these determinants but it is yet to be documented in Ghana whether these indicators are the same or not.

This literature review will therefore assist the researcher in collecting the relevant data and analysing them with the appropriate methodology in order to provide answers the research questions put forward in the first chapter.
CHAPTER FOUR
METHODOLOGY

4.1 Introduction

The section specifies the research method applied in collecting, analysing and presenting the results of the research questions asked. The section speaks to the research design, data source and description, model specification, an estimation of variables used in the model, diagnostic test and a description of how the data is analysed.

4.2 Research Design

Multiple regression is employed in data analysis to examine the effects of the predictive variables on the performance of MFIs in Ghana. Net profit level, Return on Asset ROA and ROE are proxies for the dependent variable (which is financial performance) model 1. For model 2, the response variable, which is outreach, is proxied by number of borrowers (B), total loans (TL) and size of institution (total assets). The explanatory variables are capital adequacy ratio (CAR), size of microfinance institution (firm size), quality of loan portfolio (NPL ratio), regulation (BOG visits), firm interest rate, deposits, age of institution (Age), cost to income ratio (CIR), inflation and GDP per capita. The study controls for macroeconomic variables such as inflation (IF) and GDP because, they are significant economic variables that influence economic activities and can affect the performance of MFIs.

4.3 Data source and description

The study uses data from one hundred and sixty-five (165) MFIs in Ghana covering the period 2014 to 2018 (5 years). A panel data set of 165 MFIs over a five (5) year period, but due to missing data on some of the variables, the total observation reduced from 825 to 219. Data on
all the variables have been compiled from the prudential Returns of various Microfinance Institutions submitted to the Bank of Ghana for the year ended 31\textsuperscript{st} December for the selected years

\textbf{4.4 Model Specification}

To analyse the determinants of the performance of MFIs in Ghana, the research sets out to assess the effect of a number of factors on Net profit, Return on Asset (ROA) and Return on Equity (ROE) of MFIs. The study then adopted the model specified below. This model was used by Appiah et al., (2015), to assess similar relations:

\begin{equation}
\text{performance}_{it} = \beta_0 + \beta_1 \text{firm}_\text{size}_{it} + \beta_2 \text{NPL}_{ratioit} + \beta_3 \text{deposits}_{it} + \beta_4 \text{cap}_\text{aderatio}_{it} + \\
\beta_5 \text{age}_{it} + \beta_6 \text{BOG}_\text{visit}_{it} + \beta_7 \text{cost}_{it} + \beta_8 \text{interest}_{it} + \beta_9 \text{inflation}_{it} + \beta_{10} \text{GDP}_{it} + \epsilon_{it}
\end{equation}

Where, \textit{performance} represents the institution’s performance measured in three different ways, capturing different aspects of performance. Specifically, it is measured by the Net profit level, return on assets (ROA) which is the net profit after tax/total assets and return on equity (ROE) which is net profit after tax/equity; \textit{firm\_size} represents the size of the MFI in terms of total assets; \textit{NPL\_ratio} represents quality of loan portfolio; \textit{deposits} is the amount of deposits of the institution; \textit{cap\_aderatio} represents capital adequacy ratio; \textit{age} represents the length of time the institution has been in operation; \textit{BOG\_visit} represents the regulation enforcement of the institution by the regulator (BOG); \textit{cost} represents the cost to income ratio of the institution; \textit{interest} is the firm’s interest rate (annual lending rate), inflation and GDP per capita are used to measure macroeconomic stability. $\epsilon_{it}$ is the random error term, $i$ denotes firm, and $t$ denotes time.

The second objective is to assess the association between outreach and performance of MFIs. To address this, the study estimated an outreach model, specified as:
where, \( outreach_{it} \) represents how accessible the MFI is, proxied by number of borrowers (B), total loans (TL) and size of institution (total assets); all other variables are defined as above, \( \pi_{it} \) = error term, \( i \) denotes firm, \( t \) denotes time.

To take care of differences across MFIs, which may influence the dependent variables (performance and outreach), we use the fixed effects or the random effects model depending on the Hausman test outcome.

4.5 Variables

4.5.1 Main Variables

The main variables employed to assess both the determinants of financial performance of MFIs and the effect of financial performance on outreach of MFIs are; the institutional performance (Net profit, ROA and ROE and the outreach variables (number of borrowers, total loans and size of institution). A number of variables are also used as determinants and controls.

(a) Performance (Net profit, ROA and ROE)

These are continuous variables and are used to measure the institutions’ performance. They are the Net profit level of the firm, ROA and ROE of the MFIs. ROA is measured as net profit after tax/total assets whiles ROE is the net profit after tax/equity. These are the dependent variables in equation (1) and main independent variables in equation (2).

(b) Outreach (Borrowers, TL and Total assets)
The Number of Borrowers (B), Total Loans (TL) and Size of Institution (total assets) are used to measure financial outreach. They are continuous variables and are used in the second equation as dependent variables.

4.5.2 Other variables used as determinants and controls

One of the factors is the age of the MFI (age), as how long the institution has been in operation can determine its performance. This is a continuous variable and it is expected to increase the institution’s performance, the older the firm is. Another factor considered is the quality of loan portfolio (NPL ratio). We expect that lower NPL ratio should translate to higher performance as there will be no need for the firms to make provision for loan losses out of their profits and also because the institution will be earning its projected interest income on performing loans. The institution deposits is one of the factors that may increase performance. The amount of deposits mobilize by MFI is expected to yield more returns from investment as the firm would generate loans out of these deposits as well as make some investments with these deposits, thus, enhancing its performance.

Capital adequacy ratio (CAR) is also among the determinants of performance. An institutions CAR measures how much of its capital is available to cover its risky assets, with risky assets being loans and advances as well as other investments with financial institutions other than with class one banks. The norm is that CAR should be positively related to performance. The interest rate (annual lending rate) of the institution is yet another factor that may determine its performance. If it is high, we expect performance to improve as the institution would receive high yield on its loans granted, provided borrowers are consistent with loan repayment and continue to take loans from the institution. Also, if the regulation (BOG visit) of the institution is
frequent, we expect performance to improve, as frequent checks on the institution by Bank of Ghana officials would mean the institutions would be kept on their toes. In addition, the cost incurred by the institution in its operations can determine its performance, all else equal, the higher the cost, the lower the performance. Finally, the macroeconomic stability variables used are inflation and GDP per capita. The variables together with their descriptions are found in table 4.1.

Table 4. 1: variables definitions and data sources

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description of Variable</th>
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<tbody>
<tr>
<td>Return on Assets (ROA)</td>
<td>Net profit after tax/Total Assets (in percentage terms)</td>
</tr>
<tr>
<td>Return on Equity (ROE)</td>
<td>Net profit after tax/Equity (in percentage terms)</td>
</tr>
<tr>
<td>Firm Size</td>
<td>Total Assets of the Firm</td>
</tr>
<tr>
<td>Age</td>
<td>Length of time the institution has been in operation (in years)</td>
</tr>
<tr>
<td>Capital Adequacy Ratio (CAR)</td>
<td>(Tier 1 capital + Tier 2 capital)/ Risk weighted assets (in percentage terms)</td>
</tr>
<tr>
<td>Loan Portfolio quality (NPL ratio)</td>
<td>Non-Performing Loans (NPL)/Gross Loans (in percentage terms)</td>
</tr>
<tr>
<td>Regulation (BOG visit)</td>
<td>Whether or not it is Examined by Bank of Ghana within a financial year</td>
</tr>
<tr>
<td>Cost to income ratio</td>
<td>Operating expense/Operating income (in percentage terms)</td>
</tr>
<tr>
<td>Total Loans</td>
<td>Gross Loans of the firm</td>
</tr>
<tr>
<td>Net profit</td>
<td>Revenue less all expenses, including interest and taxes</td>
</tr>
<tr>
<td>Borrowers</td>
<td>Total number of borrowers of the firm</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>Annual GDP/population size</td>
</tr>
<tr>
<td>Inflation</td>
<td>Annual inflation rate</td>
</tr>
<tr>
<td>Interest rate</td>
<td>Firm’s annual lending rate</td>
</tr>
</tbody>
</table>
The study will make use of the fixed and random effects models. Hausman test will be applied to select the best model with reliable result from the above two models. The Hausman test has a null hypothesis of no significant difference in the estimator of fixed effect model and random effect model. If the null hypothesis is rejected, the fixed effect model will be the appropriate model.

4.6 Diagnostic tests

Baltagi, Jung and Sung (2010) mentioned that the component of panel data model with the standard error assumes homoskedastic variance of the disturbance and no serial correlation. Empirically, without these premises, the uses of panel data models are weakened. Serial correlation and heteroskedasticity are usually estimation problems connected to panel data and their presence make the estimates of the regression coefficients not efficient, among others (Granger and Newbold, 1974). With Heteroskedasticity, inferring from the t and f statistics becomes unreliable and hence, the need to check and control for it in the analysis. Serial correlation is tested using the Wooldridge (2008) test whilst Breuch-Pagan (BP) test is used to test for heteroskedasticity. A robust command is used to correct heteroskedasticity and serial correlation in the data.
CHAPTER FIVE
DATA ANALYSIS AND DISCUSSION OF RESULTS

5.1 Introduction

This chapter presents and discusses issues concerning the panel model econometric estimation specified in chapter four above. STATA is employed to carry out the regression analysis. The analysis starts with a descriptive analysis of the variables used and then proceeds to carry out the diagnostic tests discussed in chapter four. Finally, the results of the actual estimations are presented and discussed.

5.2 Descriptive analysis

This section presents a brief discussion of the fundamental statistical properties of the variables used in the model over the period 2014 to 2018. Among the summary statistics examined are the mean, standard deviation, minimum and maximum values for the pooled sample presented in Table 5.1.

<table>
<thead>
<tr>
<th>Table 5.1: Summary statistics of variables, 2014-2018</th>
</tr>
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<tbody>
<tr>
<td>Variable</td>
</tr>
<tr>
<td>-----------</td>
</tr>
<tr>
<td>Return on Assets</td>
</tr>
<tr>
<td>Return on Equity</td>
</tr>
<tr>
<td>Net Profit</td>
</tr>
<tr>
<td>Total Assets (firm size)</td>
</tr>
<tr>
<td>Number of Borrowers</td>
</tr>
<tr>
<td>Gross Loans</td>
</tr>
<tr>
<td>Capital Adequacy Ratio</td>
</tr>
<tr>
<td>Age of Firm</td>
</tr>
<tr>
<td>Deposits</td>
</tr>
<tr>
<td>NPL Ratio</td>
</tr>
<tr>
<td>BOG Visit</td>
</tr>
<tr>
<td>Cost/Income Ratio</td>
</tr>
<tr>
<td>Firm Interest Rate</td>
</tr>
<tr>
<td>Inflation</td>
</tr>
<tr>
<td>GDP per capita</td>
</tr>
</tbody>
</table>

Source: Author’s computation using STATA
The standard deviation column from Table 5.1 above measures the extent to which the variables are dispersed from their means. Large standard errors are as result of the presence of outliers, which have significant influence on the data. Also, the spread is determined by difference between the maximum and minimum values of the variables. A bigger gap between the variable and its mean is reflected by a the larger the standard deviation of the said variable.

On the average, MFI used in the study made about 4.31% return on their assets. Thus, averagely MFIs in Ghana produced net income of 4.31% of their total assets. The maximum and minimum values of ROA were 255.50% and 0.10% respectively over the period. The average of Return on equity for the period was about 19.26%, with about 0.1% minimum and about 285.14% maximum. Meaning on the average, MFIs in Ghana generate net income of 19.26% from their shareholders’ funds. The mean value of Net profit was GH¢82,087.06, with about GH¢20.84 minimum and about GH¢11,600,000 maximum. Capital adequacy ratio averaged 54.11%, which meets Bank of Ghana’s minimum CAR of 10% for MFIs (see Rule 33(1) of the Business Rules and Sanctions for Microfinance Institutions). The average NPL ratio for the selected firms was 64.71%. This is considered high compared to Bank of Ghana’s prudential limit of maximum NPL ratio of 5% (see Rule 42(2) of the Business Rules and Sanctions for Microfinance Institutions). This indicates that MFIs are largely characterized by high non-performing loans. A breakdown of the remaining variables is found in the table 5.1 above.

Table 5.2 below shows the correlation between the variables used in this study. From the table 5.2, the correlations between all the variables are generally low (below 0.70). The highest correlation is 0.6864 which is recorded between volume of deposits and loans. The general low correlations mean that there is less collinearity among the variables.
Table 5.2: Correlation matrix

<table>
<thead>
<tr>
<th></th>
<th>ROA</th>
<th>ROE</th>
<th>Profit</th>
<th>Tot. Asset</th>
<th>No. of borrowers</th>
<th>Loans</th>
<th>Cap.Ade</th>
<th>Age</th>
<th>Deposits</th>
<th>NPL</th>
<th>BOG_visit</th>
<th>Cost</th>
<th>Interest</th>
<th>Inf</th>
<th>GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROA</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROE</td>
<td>0.1915</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Profit</td>
<td>0.5302</td>
<td>0.1276</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tot. Asset</td>
<td>-0.0542</td>
<td>-0.0325</td>
<td>0.1012</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of borrowers</td>
<td>-0.0455</td>
<td>-0.0476</td>
<td>0.2147</td>
<td>0.2901</td>
<td>1</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loans</td>
<td>-0.0673</td>
<td>-0.0579</td>
<td>0.4847</td>
<td>0.6178</td>
<td>0.3927</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cap.Ade</td>
<td>0.0028</td>
<td>-0.1922</td>
<td>-0.0126</td>
<td>-0.0819</td>
<td>0.1384</td>
<td>-0.0644</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.0308</td>
<td>-0.0099</td>
<td>0.1184</td>
<td>0.2389</td>
<td>0.1129</td>
<td>0.284</td>
<td>-0.1034</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deposits</td>
<td>-0.0395</td>
<td>-0.0379</td>
<td>0.2953</td>
<td>0.5919</td>
<td>0.2543</td>
<td>0.6864</td>
<td>-0.0532</td>
<td>0.1759</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NPL</td>
<td>-0.0008</td>
<td>-0.0276</td>
<td>0.001</td>
<td>-0.0049</td>
<td>0.1508</td>
<td>-0.006</td>
<td>0.0379</td>
<td>-0.047</td>
<td>-0.0443</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BOG_visit</td>
<td>-0.0987</td>
<td>-0.0665</td>
<td>-0.0469</td>
<td>0.003</td>
<td>0.0976</td>
<td>-0.0067</td>
<td>-0.0619</td>
<td>0.08</td>
<td>0.0403</td>
<td>0.0731</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost</td>
<td>0.0247</td>
<td>0.0015</td>
<td>-0.0115</td>
<td>-0.0508</td>
<td>-0.0106</td>
<td>-0.0162</td>
<td>0.2128</td>
<td>-0.0656</td>
<td>0.018</td>
<td>0.0214</td>
<td>-0.0403</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest</td>
<td>0.1038</td>
<td>0.1083</td>
<td>0.0133</td>
<td>-0.0435</td>
<td>-0.0996</td>
<td>-0.0616</td>
<td>0.1118</td>
<td>-0.0176</td>
<td>0.0329</td>
<td>-0.064</td>
<td>0.0457</td>
<td>0.1131</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inf</td>
<td>0.043</td>
<td>-0.1155</td>
<td>0.0996</td>
<td>0.0212</td>
<td>-0.0271</td>
<td>0.0204</td>
<td>0.0205</td>
<td>0.3909</td>
<td>-0.0141</td>
<td>0.064</td>
<td>-0.0011</td>
<td>0.0714</td>
<td>-0.0092</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>GDP</td>
<td>0.0523</td>
<td>0.0394</td>
<td>-0.0253</td>
<td>0.0405</td>
<td>0.0461</td>
<td>0.0154</td>
<td>-0.0751</td>
<td>-0.0742</td>
<td>-0.0055</td>
<td>-0.1575</td>
<td>0.1662</td>
<td>-0.0889</td>
<td>0.0383</td>
<td>-0.4973</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Author’s computation using STATA
5.3 The Hausman test

As mentioned early on, the study compared the FEM with the REM using the Hausman test, results of which are shown in Appendix A1. From the results, the Hausman test rejects the null hypothesis of no correlation between the regressors and the MFI heterogeneity error term. This makes the fixed effect model (FEM) appropriate over the random effects model. Therefore, the study adopts and presents results of the fixed effect model.

5.4 Diagnostic Tests

To ensure the appropriate correction for more robust results, the study test for the presence of multicollinearity, serial correlation, and heteroskedasticity.

5.4.1 Multicollinearity

An important concern of multicollinearity is that, as its degree increases, the estimated coefficients become unstable and their standard errors can get widely inflated. Also, a severe multicollinearity can cause the coefficients to change signs. To check for its presence, we employ the Variance Inflation Factor (VIF) test for multicollinearity, results of which is shown in Table 5.3 below.
### Table 5.3: VIF test for Multicollinearity

<table>
<thead>
<tr>
<th>Variable</th>
<th>VIF</th>
<th>1/VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>inflation</td>
<td>1.62</td>
<td>0.616511</td>
</tr>
<tr>
<td>lngdpercapa~a</td>
<td>1.44</td>
<td>0.696287</td>
</tr>
<tr>
<td>age</td>
<td>1.32</td>
<td>0.757656</td>
</tr>
<tr>
<td>lntotalass~s</td>
<td>1.27</td>
<td>0.787517</td>
</tr>
<tr>
<td>lndeposits</td>
<td>1.25</td>
<td>0.799900</td>
</tr>
<tr>
<td>capitalade~y</td>
<td>1.13</td>
<td>0.885079</td>
</tr>
<tr>
<td>costincome~o</td>
<td>1.08</td>
<td>0.928908</td>
</tr>
<tr>
<td>BOG_visit</td>
<td>1.07</td>
<td>0.935490</td>
</tr>
<tr>
<td>loanassetq~o</td>
<td>1.05</td>
<td>0.953235</td>
</tr>
<tr>
<td>firmintere~e</td>
<td>1.04</td>
<td>0.961622</td>
</tr>
</tbody>
</table>

**Mean VIF** 1.23

Source: Author’s computation using STATA

The table above shows the VIF test. It reveals a general minimal correlation among the independent variables. The rule of thumb is that VIF should not exceed 10 (Gujarati and Porter, 2009). The VIF of all the variables are less than 10. This means that each of the variables can be considered as a linear combination of the dependent variables.

#### 5.4.2 Serial Correlation

Among the salient assumptions that yields consistent parameter estimates is the assumption of no correlation between the error term and the regressors. The study therefore employed the Wooldridge test to verify this assumption, results of which are shown in Tables 5.4 and 5.5 below.

From the Tables, a Probability value of 0.215 and 0.213 fails to reject the null hypothesis and confirms the absence of autocorrelation in the panel models.
5.5 Empirical Results and Discussion

The results shown in table 5.4 are obtained from estimating equation (1) using the fixed effect (FE) techniques. The outcome of the Hausman test in Appendix A1 rejects the null hypothesis of no correlation between the dependent variables and the country heterogeneity error term, making the fixed effect model (FEM) appropriate for this study. Therefore, we present the estimates of the FE estimator. Three different performance measures are utilized in the analysis. Thus, Return on Assets (ROA), Return on Equity (ROE) and Firm Net Profit are used to measure the MFIs’ performance in table 5.4.

5.5.1 Determinants of Microfinance Performance

Among the determinants considered in table 5.4, only CAR, cost/income ratio, firm interest rate and inflation are significant in one column or the other. The coefficient of capital adequacy ratio (CAR) is negative and statistically significant across all columns. Therefore we do not reject the hypothesis that an increase in CAR leads to a decrease in microfinances’ performance. In particular, the results indicates that, an extra per cent increase in capital adequacy ratio leads to a decrease in net profit by 1.96%, ROA by 0.255% and ROE by 0.734% all other things being equal. This outcome is contrary to the findings of Hassan and Bashir, 2003 and Barathi Kamath, 2007) of a positive relationship between CAR and profitably, as a high CAR, it means the firm’s ability to absorb loses and prevent firm failure is adequate, which places them in a better position to make good returns. However the analysis finds of a negative relationship between CAR and firm performance, which conforms to the risk-return hypothesis. As it will imply that though the institutions may have more than enough capital, they may not be putting this capital into efficient use, mainly through the generation of good loans, which are a major source of income to these MFIs. Rather, the company may just be holding on to its capital, afraid to invest in risky assets.
such as loans but rather may be investing in government securities, which are considered risk free. Hence having adequate capital and not investing enough in risky assets may result in lower returns.

Table 5.4: Estimates of equation (1) using Fixed Effect, 2014-2018

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Net Profit</th>
<th>Return on Assets (ROA)</th>
<th>Return on Equity (ROE)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>Capital Adequacy Ratio</td>
<td>-0.020**</td>
<td>-0.255*</td>
<td>-0.734***</td>
</tr>
<tr>
<td></td>
<td>(0.008)</td>
<td>(0.140)</td>
<td>(0.238)</td>
</tr>
<tr>
<td>Age of Firm</td>
<td>0.037</td>
<td>0.957</td>
<td>1.420</td>
</tr>
<tr>
<td></td>
<td>(0.151)</td>
<td>(1.065)</td>
<td>(2.143)</td>
</tr>
<tr>
<td>Log of tot. Asset (size)</td>
<td>-0.158</td>
<td>-2.614</td>
<td>-0.495</td>
</tr>
<tr>
<td></td>
<td>(0.102)</td>
<td>(2.576)</td>
<td>(2.966)</td>
</tr>
<tr>
<td>Log of Deposits</td>
<td>-0.0161</td>
<td>0.153</td>
<td>1.553</td>
</tr>
<tr>
<td></td>
<td>(0.110)</td>
<td>(0.678)</td>
<td>(1.638)</td>
</tr>
<tr>
<td>NPL Ratio</td>
<td>0.000</td>
<td>0.003</td>
<td>-0.009</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.003)</td>
<td>(0.013)</td>
</tr>
<tr>
<td>BOG Visit</td>
<td>0.0504</td>
<td>-4.378</td>
<td>-4.908</td>
</tr>
<tr>
<td></td>
<td>(0.284)</td>
<td>(3.351)</td>
<td>(9.637)</td>
</tr>
<tr>
<td>Cost/Income Ratio</td>
<td>-0.000</td>
<td>-0.001</td>
<td>-0.008**</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.001)</td>
<td>(0.003)</td>
</tr>
<tr>
<td>Firm Interest Rate</td>
<td>0.006</td>
<td>0.105</td>
<td>0.303**</td>
</tr>
<tr>
<td></td>
<td>(0.007)</td>
<td>(0.077)</td>
<td>(0.129)</td>
</tr>
<tr>
<td>Inflation</td>
<td>0.390***</td>
<td>1.938</td>
<td>2.516</td>
</tr>
<tr>
<td></td>
<td>(0.131)</td>
<td>(1.712)</td>
<td>(2.827)</td>
</tr>
<tr>
<td>Log of GDP per capita</td>
<td>1.435</td>
<td>32.64</td>
<td>-45.11</td>
</tr>
<tr>
<td></td>
<td>(2.557)</td>
<td>(25.27)</td>
<td>(90.39)</td>
</tr>
<tr>
<td>Constant</td>
<td>-5.576</td>
<td>-240.8</td>
<td>310.5</td>
</tr>
<tr>
<td></td>
<td>(20.45)</td>
<td>(188.7)</td>
<td>(689.0)</td>
</tr>
<tr>
<td>Year Effects</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Observations</td>
<td>219</td>
<td>219</td>
<td>217</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.104</td>
<td>0.151</td>
<td>0.202</td>
</tr>
<tr>
<td>Serial Correlation</td>
<td>1.585</td>
<td>1.585</td>
<td>1.585</td>
</tr>
<tr>
<td></td>
<td>[0.215]</td>
<td>[0.215]</td>
<td>[0.215]</td>
</tr>
<tr>
<td>Number of institutions</td>
<td>103</td>
<td>103</td>
<td>103</td>
</tr>
</tbody>
</table>

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. The coefficients of the year dummies are not stated for brevity.
The coefficient of cost/income ratio is also negative and statistically significant at 5% level only in column 3 where ROE is the dependent variable, here, we do not reject the hypothesis that, increase in the firm’s cost tend to decrease MFIs’ performance. Specifically, all else equal, the result shows that, an extra per cent increase in the firm’s cost leads to a decrease ROE by 0.008%. This outcome is intuitive since ROE is the ratio of net profit and total equity, huge cost incurred by the firm in its operations will reduce profit level which will in turn reduce ROE and hence the firm’s financial performance. This is line with the findings of Mathuva (2009).

Firm interest rate from the results is another factor that influences microfinances’ performance. The coefficient is positive and significant at 5% level in column 3. This indicates that, an increase in the firm’s interest rate (annual lending rate) tends to increase its performance. To be specific, a percentage increase in the firm’s interest rate leads to an increase in ROE by 0.303%. This is logical since high interest charged by MFIs on their loans will lead high interest income, which would translate, into high profit, hence high ROE. Though firm interest rates impact positively on financial performance, MFIs should be careful not to increase interest rates to the extent that loans become too expensive for borrowers.

Finally, the coefficient of inflation is positive and statistically significant in column 1, indicating that higher inflation leads to higher MFI performance. This is reasonable if net profit is in nominal term, as high inflation would mean MFIs can charge high interests on loans. Specifically, the result shows that a percentage increase in inflation leads to 0.390% increase in net profit.

However, the age of the firm, total assets, deposits, NPL ratio, BOG visits and GDP per capita are not significant determinants of MFIs’ performance.
<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Number of Borrowers</th>
<th>Volume of Loans</th>
<th>Firm Size-Total Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>Log of profit</td>
<td>-14.71 (51.48)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Return on Assets</td>
<td>-1.441 (1.678)</td>
<td>-0.787 (0.747)</td>
<td></td>
</tr>
<tr>
<td>Return on Equity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital Adequacy Ratio</td>
<td>-1.563 (3.162)</td>
<td>-1.636 (2.712)</td>
<td>-1.897 (2.826)</td>
</tr>
<tr>
<td>Age of Firm</td>
<td>113.6* (61.93)</td>
<td>114.0* (60.48)</td>
<td>113.8* (60.69)</td>
</tr>
<tr>
<td>Log of Deposits</td>
<td>67.91** (29.04)</td>
<td>68.10** (28.83)</td>
<td>68.92** (29.26)</td>
</tr>
<tr>
<td>NPL Ratio</td>
<td>-0.801*** (0.224)</td>
<td>-0.805*** (0.233)</td>
<td>-0.819*** (0.239)</td>
</tr>
<tr>
<td>Cost/Income Ratio</td>
<td>-0.027 (0.0530)</td>
<td>-0.026 (0.0476)</td>
<td>-0.031 (0.0508)</td>
</tr>
<tr>
<td>Firm Interest Rate</td>
<td>3.035 (1.870)</td>
<td>3.056 (1.857)</td>
<td>3.200 (1.947)</td>
</tr>
<tr>
<td>Inflation</td>
<td>-38.58 (48.93)</td>
<td>-41.80 (37.39)</td>
<td>-41.13 (37.77)</td>
</tr>
<tr>
<td>Log of GDP per capita</td>
<td>-527.2 (563.7)</td>
<td>-516.3 (541.7)</td>
<td>-599.5 (549.9)</td>
</tr>
<tr>
<td>Constant</td>
<td>4.344 (4,584)</td>
<td>4.182 (4,495)</td>
<td>4.803 (4,486)</td>
</tr>
<tr>
<td>Year Effects</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Observations</td>
<td>218</td>
<td>218</td>
<td>216</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.059</td>
<td>0.059</td>
<td>0.059</td>
</tr>
<tr>
<td>Number of institutions</td>
<td>102</td>
<td>102</td>
<td>102</td>
</tr>
</tbody>
</table>

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. The coefficient of the year dummies are not stated for brevity.
5.5.2 Effect of Microfinance Performance on its Outreach

In table 5.5, only the coefficient of return on assets as a measure of performance is statistically significant in column (8) under firm size (total assets), therefore we fail to reject the hypothesis that increasing microfinance performance (return on assets) tends to decrease outreach by way of firm size, as it is assumed that a larger firm size means the firm has the capacity to reach more people in the society. In particular, the results in column (8) indicates that, a percentage increase in an MFI’s performance leads to 2.39% decrease in its outreach in terms of firm size (total assets), all else equal. This outcome follows logic because an increase in the size of the MFI, if not properly managed will tend to decrease its performance by way of low returns.

To conclude, the results support the hypothesis of a negative and significant effect of return on assets on firm size (total assets). That is, in Ghana there is a negative association between large MFIs and performance at the aggregate level.

5.5.3 Control Variables

To start with, the coefficient of capital adequacy ratio is negative and statistically significant under firm size (total assets) as a measure of outreach. All else equal, this means that the more adequate the capital of MFI is to absorb losses, the lower the firm’s outreach in terms of total assets. Thus firms with higher CAR tend to have lower outreach. This is in line with the expectation of the study as these MFIs though have sufficient capital, tend to limit themselves on the volume and amount of loans given for fear of having high NPL ratios, which in turn have a negative effect on the firms CAR.

The coefficient of age of the firm is positive and significant in columns (1), (2) and (3). This means that the older the MFI, the greater the outreach (number of borrowers), all else equal. This
is in line with the expectations of the study because age of the institutions makes the institution more reputable and experienced, thereby increasing its ability to provide financial services to a larger number of people over time.

Again, the coefficient of the institution’s deposit level is positive and significant in columns (1), (2) and (3). Suggesting that higher MFI’s deposit level tend to increase outreach (number of borrowers), all else equal. This is consistent with the expectations of the study because, high deposits provide funds to the institution for on lending to interested borrowers, hence increasing the number of borrowers.

Another significant control variable is the NPL ratio, the coefficient is negative across regression but significant under number of borrowers and volume of loans. This suggests that higher NPL ratio tends to decrease outreach by way of reducing the number of borrowers and volume of loans, which is intuitive. MFIs will generally be sceptical about who they give loans to if they record high NPLs.

Also, high cost incurred by the MFI tends to decrease outreach. The negative coefficients indicate that, higher cost/income ratio tends to decrease volume of loans given by the MFI. This is so because; higher firm cost may affect the availability of loanable funds to be given out.

The coefficient of firm interest rate is positive across regressions but statistically significant under firm size. This means that higher firm interest rate leads to an increase in firm size. This is intuitive, since high interest rate charge increases profits, which facilitates the expansion of the firm size if such profits are ploughed back.
Finally, for the macroeconomic variables, only the coefficient of inflation was significant under firm size, suggesting that higher inflation leads to bigger firm size (high total assets). Inflation would result in the firm’s upward adjustment of its lending rate and if loans are performing, would result in high interest income which translates into high profits and if ploughed back would result in increased total assets. However, GDP per capita was not statistically significant across all regressions.
CHAPTER SIX
SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

In this chapter is a presentation of the summary and conclusion of the study as well as some recommendations based on the findings of the study.

6.2 Summary and Conclusion

The Microfinance Industry is a growing industry in the Ghanaian financial sector. With a total of 566 licensed MFIs (484 Microfinance Companies (MFCs), 70 Money Lending Companies and 12 Financial NGO) as at 31st December, 2017, there is the growing need to better understand the operations of these institutions and their contribution to the Ghanaian economy. MFIs provide financial assistance to mainly small and medium enterprises (SMEs) in addition to individuals, especially those in the rural areas who may have been neglected by the larger commercial banks (Otero, 1999). The Microfinance Industry is therefore very crucial in ensuring financial inclusion and to also meet development objectives such as job creation, women empowerment, help small businesses grow among others. The microfinance industry, aside being a key component of the financial system, is viewed among the critical strategies for reducing poverty in developing countries.

However, for MFIs to be able to make a positive impact on the economy and improve the welfare of the poor, sustained good financial performance and outreach are a necessary condition. The issue of financial performance of MFIs has received much attention among researchers worldwide due to their significance in achieving poverty reduction. It is argued that MFIs that are financially unsustainable will not benefit the poor in the future because they will not survive. It may also aggravate the economic plight of those they serve when MFIs collapse. Furthermore, it is suggested that unless there is the assessment of the financial performance of
MFIs and which determinants play a crucial role in ensuring MFIs achieve good sustainable financial performance. MFIs ability to assist in poverty reduction, diversify the income of the people and improve quality of life will only be a mere wish.

In Ghana, recent developments in the banking sector have drawn much attention to the performance of MFIs and their ability to meet regulatory requirements stipulated by the Bank of Ghana. Investors and donor agencies are also interested in the determinants of sustainable financial performance of MFI and how this can contribute to make maximum impact on improving the quality of life of the poor in the country. A report by UNCDF (2008) indicated that only 10% of the potential demand for credit by the poor is reached by MFIs in Ghana. This suggests that MFIs need to be financially sustainable to be able to increase credit to the poor in the country. Also, unlike the commercial banks, MFIs have low earnings due to regulatory restrictions and the need for MFIs to focus on helping the country reduce or eliminate poverty through the provision of credit and other economic empowering activities.

This study therefore focuses on the determinants of microfinance performance as well as the influence of microfinance performance on its social performance (outreach) in Ghana. The study used the net profit margin, ROA and ROE as dependent variables in the first equation to measure performance; number of borrowers, volume of loans and firm size (total assets) in the second equation to measure outreach, to assess the effect of the MFI performance on their outreach level in Ghana. The study controlled for macroeconomic factors that may affect the dependent variables in both models. Using equations (1) and (2) as written out in the previous chapter, the study estimated a panel model using data for 110 Ghanaian MFIs over the period 2014-2018. The study presented a robust estimation result of the fixed effect model as suggested by the Hausman test. The robust estimation was to control for serial correlation and heteroskedasticity.
The study found capital adequacy ratio, firm’s cost, firm’s interest rate and inflation, to be significant determinants of microfinance performance, with CAR and firm's cost having a negative effect on performance; firm’s interest rate and inflation having a positive impact on performance. On the issue of the effect of performance on outreach, the study found a negative and significant relationship between return on assets (ROA) and firm size (total assets), which show a negative relationship between financial performance and outreach of these MFIs. Indicating that the more finically sound a MFI is, the less its social performance in terms of outreach to the poor. This goes to affirm the study by Hermes et al. (2007, p. 16) in which they provided strong evidence for a trade-off between outreach to the poor and efficiency of MFIs.

In conclusion, capital adequacy ratio, firm cost incurred, firm interest rate and inflation are significant determinants of microfinance performance in Ghana. Also, MFIs in Ghana that are performing well financially tend to shift from the main microfinance mission of social outreach.

6.3 Recommendations

MFIs are critical drivers of poverty reduction in developing economies because of their vital role in extending credit to the poor and reaching out to remote areas where the populace may not have access to basic financial services. Based on the findings of the study, the following recommendations are made:

The findings show that policy makers can boost the performance of MFIs by decreasing the capital adequacy ratio (CAR) requirement since this study has demonstrated a negative and significant relationship between capital adequacy ratio and performance. A reasonable level of CAR for MFIs along with other prudential measures will provide the necessary shield against risk of insolvency whilst ensuring improved performance.
For managers of MFIs, it is important to note that capital adequacy ratio, firm operational cost incurred, firm interest rate as well as macroeconomic factors such as inflation are critical determinants of financial performance. They should therefore improve their operational efficiency by reducing operational cost through cost-effective strategies. This can be done by motivating staff, training and educating staff among others.

For academia, since the study revealed a negative relationship between outreach and performance of MFIs in Ghana, it is recommended that further studies should be conducted to find out whether this finding is pervasive or differs across regions in the country.
REFERENCES


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### APPENDICES

**Appendix A1: Hausman specification test**

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<th>Coefficients</th>
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<th>(b)</th>
<th>(b-B)</th>
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</table>

**Test:** Ho: difference in coefficients not systematic

\[
\chi^2 (9) = (b-B)^\top [(V_b-V_B)^\top (b-B)] (b-B)
\]

\[
= 27.02
\]

Prob>\chi^2 = 0.0014

**Therefore (V_b-V_B is not positive definite)**

Source: Author’s computation using STATA