

UNIVERSITY OF GHANA

**SMALL AND MEDIUM-SIZED ENTERPRISES' (SMEs') ACCESS TO
CREDIT IN GHANA: DETERMINANTS AND CHALLENGES**

BY



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DECLARATION

This is to certify that this thesis is the result of research undertaken by Gariba Fuseini towards the award of Master of Philosophy degree in Economics in the Department of Economics, University of Ghana and has not been presented by anyone for any academic award in this or any other university. I hereby declare that this thesis is entirely my own work, done under the guidance of my supervisors. All references used in this work have been fully acknowledged. I bear sole responsibility for any shortcomings.

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ABSTRACT

The motivation for this study is the persistent lack of access to credit facing all firms in general and SMEs in particular. The study examined factors that determine access to finance as well as challenges facing SMEs in their access to finance in Ghana. The specific objective is to find the factors that influence SMEs' demand for and access to credit in Ghana. The study focused on characteristics of the owners/managers of SMEs and features of those SMEs that influence their demand and access to credit in Ghana.

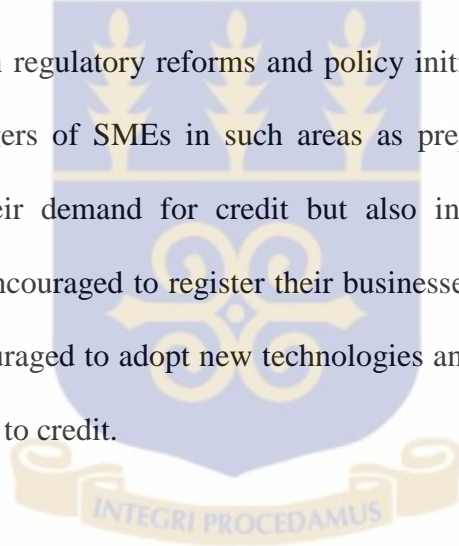
The study used a firm-level survey of 720 firms which was conducted by the World Bank in Ghana in 2013. The study employed Heckman Probit regression with sample selection model to estimate the factors that influence firm's demand and access to credit. This is because of the hypothesis that firms may be self-selected in their decision to apply for credit, which can lead to sample selection bias. The standard probit regression of access to credit was also estimated since there was no evidence of selection bias.

The study finds evidence to support the case that all Ghanaian firms in general, and SMEs in particular, face credit constraints. Even though firms rank access to finance as the biggest obstacle of the business environment, most of the firms that applied for credit had access. However, majority of firms did not apply for credit because they had no need for a loan and for others firms features of the loan such as complex application process; unfavourable interest rates, high collateral requirement and short loan maturity period were major obstacles preventing them from applying for credit. The study also finds that there is no evidence of self-selection among

firms in Ghana regarding their decision of seeking for external funding or their participation in the credit market.

Also, the study finds that access to credit is influenced mostly by specific characteristics of the firm such as firm innovation, registration, location, possession of bank account and having audited financial statements. In addition, demand for credit is influenced by firm characteristics such as firm's innovation, location, ownership of land, having audited financial statements and future expansion plans.

In the light of this, the study recommends that both demand- and supply-side barriers need to be identified and tackled through regulatory reforms and policy initiatives. Specifically, providing training to owner and managers of SMEs in such areas as preparation of financial accounts would not only promote their demand for credit but also increase their access to credit. Moreover, SMEs should be encouraged to register their businesses and become formal. Owners of SMEs should also be encouraged to adopt new technologies and innovations as this increases their chances of having access to credit.



DEDICATION

I dedicate this work to my dear mother, Zenabu Adamu.



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LIST OF ABBREVIATIONS

BAF	Business Assistance Funds
CGS	Credit Guarantee Schemes
EMPRETEC	Empresas Technologicas Ghana Foundation
FUSMED	Fund for Small and Medium Enterprises Development
GDP	Gross Domestic Product
GNI	Gross National Income
GSS	Ghana Statistical Service
IFC	International Finance Corporation
MASLOC	Microfinance and Small Loans Centre
MFI	Micro Finance Institutions
MSME	Micro, Small and Medium-sized Enterprises
NBFI	Non-Bank Financial Institutions
NBSSI	National Board for Small Scale Industries
NPL	Non-Performing Loans
OLS	Ordinary Least Square
RCBs	Rural and Community Banks
ROSCA	Rotating Savings and Credit Associations
SMEs	Small and Medium-sized Enterprises
SSA	Sub-Saharan Africa
UNCTAD	United Nations Conference on Trade and Development
UNIDO	United Nations Industrial Development Organisation

WBES

World Bank Enterprise Survey

CHAPTER ONE

INTRODUCTION

1.0 Background of the Study

A number of studies have emphasized the growing importance of credit to the growth and productivity of every business entity especially Small and Medium-sized Enterprises (SMEs) (Aryeetey et al., 1994; Osei-Assibey, 2013). Finance serves as a catalyst that promotes the survival and growth of firms, both in developing and developed countries. Whereas new firms require credit as a start-up capital, credit is also a source of working capital and investment for existing firms. Indeed, credit is the life-blood of every business enterprise. Businesses require capital for their operations in purchasing assets, paying employees' remuneration, as well as covering operational expenses. Improved access to credit helps SMEs' to build their productive capacity and also makes them competitive in both the local and the global market (UNCTAD, 2002).

SMEs have been identified to play an important role in the growth and development of many economies, of which Ghana is no exception (Kayanula and Quartey, 2000). It is empirically found that SMEs promote entrepreneurship because they are more labour intensive and thus, help in the creation of employment (Gambold, 2008). According to UNIDO (1999), SMEs make up over 90% of enterprises in the world and account for 50 to 60 per cent of employment. In Ghana, according to the Registrar-General, about 90 % of registered companies are SMEs, accounting for about 80% of the private sector and 92% of businesses in Ghana (Abor and Beikpe, 2006).

Even though SMEs generally face a number of obstacles to their growth, several empirical studies have identified lack of access to credit as a major setback facing many SMEs, both in developed and developing countries especially Sub-Saharan African countries (Aryeetey et al., 1994; Baah-Nuakoh, 2003; Beck and Demirgüç-Kunt, 2005; Beck and Cull, 2014). For instance, using firm-level survey of over 10,000 firms conducted by the World Bank in 1999 and 2000 in more than 80 countries, Beck and Demirgüç-Kunt (2005), find that small firms are 39% likely to mention financing as a severe obstacle to growth relative to medium-sized firms (36%) and large firms (32%).

Similarly, Aryeetey et al. (1994, p. 79), in a study of 133 manufacturing firms in Ghana, finds that, “an overwhelming 60 per cent of the SMEs surveyed complained that credit was a major constraint to expansion”. The study also indicates that medium firms have 69.1% chance of success in accessing credit, compared to 45% for small enterprises and 33.7% for microenterprises.

The major challenges the SMEs face in accessing credit externally includes requirements such as conditions such as interest rate, maturity, collateral and lending procedures (Stephanou and Rodriguez, 2008). In a field survey of SMEs in Tamale in the Northern Region of Ghana, Alhassan and Sakara (2014) find that SMEs are constrained in their ability to present collateral, business plans and personal guarantors demanded by the bank, in addition to cumbersome loan application process and unfavourable repayment period. As a result, some SMEs tend to rely on informal sources of credit such as owner’s family, friends and ‘susu’ lenders to finance their operations (Beck and Demirgüç-Kunt, 2005; Nkuah et al., 2013).

This perennial problem of lack of access to credit among SMEs has been a subject that has attracted the attention of many researchers, policy makers and governments (Kayanula and Quartey, 2000). However, despite a number of policy initiatives that has been implemented in this regard to ameliorate credit constraints facing SMEs, both in the urban and rural areas in Ghana, lack of access to credit still remains a major obstacle for many firms, especially SMEs (Baah-Nuakoh, 2003; Osei-Assibey, 2014). Most of these support programmes are in the form of Credit Guarantee Schemes (CGS) to assist firm owners with inadequate collateral security to have access to credit from financial institutions (Kayanula and Quartey, 2000).

Moreover, institutional support in the form of training in financial reporting and providing credit to these business enterprises has been provided with the objective of helping to develop SMEs in Ghana (Baah-Nuakoh, 2003). These institutions include the National Board for Small Scale Industries (NBSSI) which was established in 1985; and Microfinance and Small Loans Centre (MASLOC) which was established in 2006 to “provide, manage and regulate approved funds for microfinance and small scale credit, loan schemes and programmes and also to provide business advisory services, training and capacity building for small and medium scale enterprises (SMEs)” Microfinance and Small Loans Centre (MASLOC, 2006).

Theoretically, lack of access to credit has been explained through the credit rationing hypothesis propounded by Stiglitz and Weiss (1981), which posits that, it is the result of information asymmetries resulting in financial market inefficiencies. The problems of adverse selection and moral hazards in loan contracts coupled with weak enforcement of those contracts and agreements result in imperfections of the financial market. Thus, credit is provided with

uncertainty due to information asymmetry. Financial institutions are not able to get all information about the potential borrower in order to determine their credit worthiness or the profitability of the purpose for which the credit is required. On the other hand, SMEs who seeks financial assistance are not able to signal to these financial institutions that they possess the desired characteristics that improve their probability of fulfilling their loan obligations.

The amount of credit financial institutions are able to provide SMEs depends, to a large extent, on their ability to assess the probability that these loans would be repaid (Stiglitz and Weiss, 1981). In addition, market failures, regulatory constraints, supervisory weaknesses, financial infrastructure deficiencies and financial institution capacity affect the supply of credit to the SME sector (Malhotra et al., 2007). Studies show that limited use of lending technologies such as scoring and financial modelling, in loan evaluation and decision making by commercial banks, also constrain the supply of credit to small scale entrepreneurs seeking external finance (Malhotra et al., 2007; Deakins et al., 2010).

However, financial institutions are able to estimate the creditworthiness of SMEs based on availability of information, due to low development of these modern technologies into the financial system of most developing countries like Ghana. These include information about the characteristics of the owners of the enterprise such as level of education, business experience and competency and affiliation to business associations (Pandula, 2011; Kumah, 2011). Moreover, features of the firm such as size, age, the value and tangibility of their assets and possession of audited financial statements enable financial institutions to assess the ability of SMEs to repay loans (Deakins et al., 2010; Kumah, 2011).

According to Berger and Udell (1995), both formal and informal lending institutions adopt higher interest rates and the demand for collateral security in order to reduce the risk of default resulting from adverse selection and moral hazard. This is because providing credit to SMEs involves higher risk due to the lack of financial information about their operations. These requirements pose a serious impediment to access to credit by SMEs in Ghana. The requirements of providing documented financial statements in order to determine the eligibility for the loan also constitute a significant challenge to SMEs in accessing credit.

1.1 Problem Statement

Several empirical studies indicate that SMEs are severely constrained in their access to finance [Aryeetey et al., (1994), Baah-Nuakoh, 2003]. For instance, a study by Abor and Beikpe (2006) indicates that SMEs' lack of access to credit results from their low participation in the capital markets partly due to the perception of higher risk, informational barriers and higher costs of intermediation for smaller firms. Without finance, SMEs cannot acquire new technologies, compete in the global market or establish linkages with larger firms (UNCTAD, 2002).

However, several policy initiatives have been implemented by government and the private sector to assist SMEs such as rural finance project and the credit guarantee scheme. As observed by Gockel (2003), there has been establishment of new banks and Non-Bank Financial Institutions (NBFIs), which serve the financing needs of SMEs. Additionally, there has also been significant support from international donor institutions such as United Nations Conference on Trade and

Development (UNCTAD) and United Nations Industrial Development organisation (UNIDO). For Abor and Beipke (2006, p. 68), SMEs' financing constraints are due to the low awareness and usage levels of the financing initiatives among SMEs and the perceived difficulty in access these financing schemes. It is in this view that, Aryeetey et al. (1994) assert that lack of access to credit may have been over exaggerated, because most entrepreneurs tend to overlook their internal management problems and that many SMEs recorded high growth rates despite lack of access to finance. Moreover, the SME market lacks saturation because most banks have not yet developed niche strategies to target SMEs (Stephanou and Rodriguez, 2008). It is in view of this that this study would be relevant in discovering the factors that influence the SMEs' access to credit.

1.2 Research Questions

This study seeks to answer the following questions:

- 1.) What factors influence SMEs' demand for credit in Ghana?
- 2.) What factors determine SMEs' success in accessing credit from financial institutions in Ghana?

1.3 Objectives of the Study

The purpose of this study is to identify the determinants of access to credit among SMEs in Ghana as well as the challenges faced by SMEs and lending financial institutions. Specifically the study seeks to examine:

- 1.) The factors that determine SMEs' demand for credit.
- 2.) The factors that determine SMEs' likelihood of having access to credit in Ghana.

1.4 Justification and Significance of Study

This study is relevant in view of the significant contribution of SMEs to the socio-economic development in Ghana. The problem of access to credit has long been the main attention of many researchers. However, study of the literature on SME financing indicates that there is a significant gap in knowledge of the determinants of access to finance among SMEs in Ghana.

Even though previous studies have been conducted on the determinants of supply of credit to SMEs in Ghana, there are only a few studies on determinants of demand for credit. However, these previous studies (Kumah, 2011; Osei-Assibey, 2014) may suffer from selection bias because analysis of the determinants of access to credit is based only on a sample of firms that have applied for credit. In contrast, this current study corrects for this bias by modelling the determinants of access to credit using heckman probit regression with sample selection method. This method includes not only firms that have applied for credit but also those that have been discouraged from doing so for various reasons.

Firstly, the findings of this study can inform government policies that aim at eliminating the SMEs financing obstacles, especially, with regard to access to credit. Understanding how these factors affect access to credit would be important in prioritizing the efforts of government and relevant stakeholders in promoting SMEs' access to credit and, hence, the financial inclusion of SMEs in Ghana. The findings of the study will also serve as a guide to lending institutions on ways of meeting the financial needs of SMEs in Ghana, with the minimum risks. It will also guide SMEs as to factors that would promote their success in accessing external funding from financial institutions. Lastly, this study will contribute to the existing literatures on SMEs' financing.

1.5 Organization of the Study

The study is organized into five chapters. The present chapter provides a general description of the study, which entails the introduction and background of the study, the problem statement, research questions and objectives, as well as justification for this study.

Chapter two gives a general overview of the SME sector, particularly, the theoretical definition of SMEs, both in advanced and developing countries, the importance of SMEs in economic development, general problems facing them and financial support from government to overcome these financing obstacles.

In chapter three, the relevant theoretical and empirical literatures on demand and supply sides determinants of access to credit among SMEs are reviewed. This Chapter also discusses the

definition of access to credit and theoretical framework of credit rationing hypothesis as well as past and current studies on the determinants of demand and access to credit, both in Ghana and in the other countries.

Chapter four describes the study methodology as well as findings from the study, which encompasses the sources of data, specification of the research model used. Chapter four also analyses the research data using appropriate statistical tools such as both descriptive statistics and probit regression with sample selection method.

Lastly, the research ends with chapter five, which provides a summary of the research findings and relevant conclusions, and offers appropriate policy recommendations.

CHAPTER TWO

OVERVIEW OF SMALL AND MEDIUM-SIZED ENTERPRISES SECTOR

2.0 Introduction

This chapter gives an overview of the SMEs sector, both in developed and developing economies, with particular focus on Ghana. It begins with theoretical definition of SMEs and a general overview of the SME sector in Ghana. Further, the study examines the important roles that SMEs play in economic growth and development, especially in developing countries such as Ghana. This chapter also discusses general problems facing SMEs sector, particularly lack of access to credit. Finally, government's financial supports aimed at alleviating SMEs financing constraints in Ghana are also discussed.

2.1.0 Definition of Small and Medium-sized Enterprises (SMEs)

A number of studies have tried to come up with a working definition of what kind of businesses can be classified as SMEs (Kayanula and Quartey, 2000). As noted by Gockel (2003), the challenges faced by SMEs, especially with regard to access to credit is partly because they lack an operational definition and partly due to lack of understanding of their heterogeneous nature by lending institutions. According to Kayanula and Quartey (2000), there is no single, universal, or uniformly acceptable definition of small scale enterprises. As a result, several measures have been used to define SMEs.

A survey of the literature on the definitions of SMEs is based on different criteria such as number of workers employed, annual rate of turnover and value of fixed assets. However, the commonest criterion used across countries is the number of employees, but this definition varies across countries and even within the same country there are divergent views on the exact number of workers and the cut-off point to be used (Ayyagari et al., 2003).

The European Union considers a Micro, Small and Medium-sized Enterprise (MSME) as one with up to 250 employees and with either a turnover of no more than €50 million or a total balance sheet value of no more than € 43 million. Specifically, micro enterprises are those firms that employ less than 10 workers and also have either turnover or balance sheet value of not more than € 2 million; small enterprises employ less than 50 employees and have turnover or balance sheet value of not more than € 10 million; and medium-sized enterprises less than 250 workers and have either turnover of € 50 million or balance sheet value of not more than € 43 million.

Similarly, the World Bank (2013) classifies an enterprise as MSME when it meets any two of the following criteria namely, number of employees, size of assets, or annual sales as follows: microenterprises employ up to 10 employees, with total assets and annual sales of up to \$10,000; small enterprises employ up to 50 employees with total assets and annual sales of up to \$3 million; and medium-sized enterprise employ up to 300 employees, with total assets and annual sales of up to \$15 million.

As noted by Kushnir (2010), the choice of SMEs' definition depends on many factors among which include business culture; the size of the country's population; industry; and the level of

international economic integration or even less personal reasons such as businesses lobbying for a particular definition, which would qualify their enterprises for a support programme by government. She cites lack of data on SMEs as major challenge due to the fact that a large number of the SMEs operate in the informal sector, especially in developing countries. Furthermore, the lack of a uniform definition of SMEs is because countries have different structural, cultural and political reasons to adopt different definitions of SMEs.

From the foregoing, there is no universal definition of SMEs, which applies to all countries. This is due to the fact that SMEs are not homogeneous; they differ from one country to the other and from one industry to the other. However, SMEs are generally privately-owned firms which have relatively a small number of personnel and low volume of sales and fixed assets (Nkuah et al., 2013).

2.1.1 SME Definition in Ghana

In Ghana, various institutions such as the Ghana Statistical Service (GSS) and National Board for Small Scale Industries (NBSSI) define SMEs using different criteria (Ackah and Vuvor, 2011). For instance, the industrial census conducted by GSS in 1987 defined micro- and small-scale enterprises as those employing up to 9 employees, medium-scale enterprises as those employing between 10 and 29 workers, and large-scale enterprises as those employing 30 or more employees (Gockel, 2003). Similarly, the NBSSI uses the number of employees and value of fixed assets as two criteria in defining Micro and Small Enterprises (MSE); micro enterprises

are those that employ up to 5 people with fixed assets not exceeding \$10,000 excluding land and buildings whereas small enterprises employ between 6 and 29 with fixed assets not exceeding \$100,000, excluding land and buildings. Thus, SMEs are those enterprises employing 29 or fewer workers.

Empirical studies by Aryeetey et al. (1994), based on a field survey of 133 enterprises classifies SMEs into four groups namely (i) microenterprises-less than 6 people; (ii) very small enterprises- between 6 and 9 workers; (iii) small enterprises-between 10 and 29 workers (iv) medium-sized enterprises- between 30-140 workers. In summary, the number of employees and value of fixed assets are the two common criteria used in defining SMEs in Ghana. The definition based on the number of employees used in most developing countries is less than that used in advanced countries due to the nature of their industry.

2.2 General Overview of the SME Sector in Ghana

As noted by Mensah (2004), there is no available data on the exact number of SMEs in Ghana, but statistics from the Registrar General's department shows that about 90 percent of registered companies are SMEs. This is partly because many of these SMEs are in the informal sector, with many of them unregistered (Mensah, 2004). The statistics on SMEs are poor for a number of reasons: lack of a uniform definition, high cost of conducting industrial census, and the fact that many SMEs do not register and remain outside the formal economy (UNCTAD, 2005).

A peculiar characteristic of SMEs in Ghana, which is often cited as the reason for their inadequate access to finance, is their low participation in the international and local capital markets as compared to larger firms and this exclusion is due to the higher cost of intermediation of smaller projects (Ackah and Vuvor, 2011). This phenomenon is attributed to the nature of the financial system.

Another feature of SMEs in Ghana is that, their products or services are provided for the local market. It is only a few numbers of these SMEs who have the capacity to market their products abroad. This is largely due to the huge capital requirement for engaging in export trade and the low level of education, training and awareness of some small business owners. Most of these SMEs are labour intensive and operate with low technological know-how and innovation. They are mostly family-owned businesses, often with little separation of the business finances from that of the owners of the business (Ackah and Vuvor, 2011). According to Mensah (2004), SMEs in Ghana are generally owned by a single person, who takes all major decisions and who often has limited formal education, and lacks information in the use of new technologies and the credit market. They are also characterized by weak management skills, lack of technical know-how and extreme working capital volatility (Mensah, 2004).

In Ghana, the SMEs are made up of varied number of businesses such as provision and retailing shops and supermarkets, restaurants and food vendors, hair dressing and barbering saloons, clothing and tailoring shops, carpentry and furniture making shops as well as small scale manufacturers of assorted items such as fruit drinks, sachet water, etc. (Kayanula and Quartey, 2000; Ackah and Vuvor, 2011). Those SMEs in rural areas are largely made up of family

groups, individual artisans, women engaged in food production of local crops, textiles and leather, agro processing, timber and mining, etc. (Kayanula and Quartey, 2000). Urban and rural SMEs in the informal sector as well as those in the industrial sector are very heterogeneous in terms of productivity, entrepreneurial talents, and profits, level of technology, capital assets, and development prospects (Seibel, 1996).

2.3 Contributions of SMEs to Economic Growth and Development

The significant contributions of SMEs to the economic growth and development of national economies especially developing countries have been emphasized by a number of empirical studies. Utilizing firm-level data from for 76 countries, Ayyagari et al. (2007) find that on average SMEs account for 55% of employment in manufacturing. SMEs usually comprise about 99 per cent of all enterprises, and account for from 44% to 70% of employment and 50% of manufacturing output. In developing countries, SMEs account for 98% of enterprises, 50% to 80% of industrial employment, and 50% of manufacturing output (UNCTAD, 2005).

According to Seibel (1996), small businesses usually operate in market niches, which are unattractive for large enterprises due to low level of profits. Small firms can strengthen domestic economic cycles and inter-sectoral relations, which is a necessary precondition for successful industrialization strategies. Moreover, in countries with a large proportion of agriculturalists and underdeveloped industrial relations, SMEs can utilize cheap, labour intensive and appropriate technologies (Seibel, 1996).

In Ghana, SMEs employ a large part of the labour force and the growth of employment in the SME sector is about 5% higher than in micro and large scale enterprises and the sector's contribution to GDP was 6% percent in 1998 (Kayanula and Quartey, 2000). According to Abor and Quartey (2010), SMEs contribute about 85% of manufacturing employment and 70% of GDP in Ghana. In addition, SMEs are also believed to make up about 92% of businesses in Ghana (Abor and Quartey, 2010). Moreover, SMEs also provide potential market for industrial and consumer goods manufacture by other large enterprises through their demand for these goods and services (Abor and Quartey, 2010).

However, a major weakness of these studies is that they fail to offer a clear mechanism through which SMEs contribute to growth. For example, Beck et al. (2003), utilizing cross-country data from the manufacturing sector of 76 countries, find that there is a robust, positive relationship between the relative size of the SME sector and economic growth. However, their cross-country analyses do not support the view that SMEs exert a causal impact on long-run growth and that there is not a significant relationship between SMEs and poverty alleviation and further that SME size is not linked with the growth rate of the incomes of society. This is because small businesses are not necessarily more labour-intensive than large enterprises. Moreover, there is not clear link between growth, poverty reduction and the promotion of small firms.

However, in view of these significant contributions made by SMEs, the development of SME sector is important since most large enterprises usually start as small ones; hence, SMEs need to be promoted to become the backbone of the economy (De la Torre et al., 2008).

2.4 Problems Facing SMEs

SMEs in both developing and developed countries face a number of problems, which are caused by complex and multi-dimensional factors (Stephanou and Rodriguez, 2008). Generally, the constraints faced by SMEs, especially those in developing countries are lack of access to credit for start-up and working capital, increasing competition, sluggish demand, insufficient supply of business inputs such as equipment, machines, raw materials, electricity and fuel and problems relating to business environment (Seibel, 1996).

In Ghana, empirical studies show that major constraints to SMEs' expansion include the following: lack of access to finance, low demand for output, technology, raw materials, labour and management, infrastructure, marketing and business environment problems [(Aryeetey et al., 1994); Baah- Nuakoh (2003); Kayanula and Quartey (2010)].

Lack of Access to Credit

The existence of a financing gap for SMEs is well documented in the literature on SMEs finance (Stephanou and Rodriguez, 2008). A number of empirical studies have found evidence that there is an SME financing gap, both in developed and developing countries (Aryeetey et al., 1994; Baah-Nuakoh, 2003; Beck and Cull, 2014). According to the World Bank Enterprise Surveys (2013), access to finance is the number one constraint facing SMEs.

Utilizing cross-country firm-level data on SME finance in Sub-Saharan Africa (SSA) and other developing countries, Beck and Cull (2014) find that more than 25% of firms in Africa rate

availability and cost of finance as the most important obstacles to their operation and growth. They also observe a lower use of financial services by firms in Africa compared to other regions of the world and this is particularly common among smaller and younger firms.

In Ghana, empirical studies by Aryeetey et al. (1994), using a sample of 133 firms, find that access to finance is the most significant obstacle to firms' future expansion and growth; about 60% viewed finance as their most serious problem. They also find that smaller and older firms emphasize lack of finance more than larger and newer ones. Similarly, in a study of obstacles to growth and expansion among 200 manufacturing firms, Baah-Nuakoh (2003) finds that, access to capital is the most frequently cited problem facing all firms and sectors in Ghana. Specifically, finance was cited as a major constraint by micro firms (55 %), small firms (57%), medium-sized firms (29%) and large firms (32%). On a scale of 1 (not important) to 5 (very important) to measure the extent of severity, lack of access to finance is the most severe constraint (3.80) among all firms, with micro firms (3.71), small firms (4.08), medium-sized firms (3.49) and large firms (3.21).

Similarly, Baah-Nuakoh (2003) finds that 45% of agro-metal firms cited finance as the most serious constraint to their productivity. Obstacles relating to finance include lack of credit to finance raw materials and equipment, high interest rate and difficulty in dealing with bank (Baah-Nuakoh, 2003).

This confirms that finance is a serious problem, particularly among micro, small and new firms. Finance tends to be a binding constraint for smaller and younger enterprises. Older, larger and foreign-owned firms report fewer financing obstacles (Beck et al., 2006). This is because older

firms have better record, experience and contacts to get access to credit than younger firms (Baah-Nuakoh, 2003). According to Stephanou and Rodriguez (2008), lending is easier for retail customers and large enterprises.

Kempson et al. (2000) identify five ways by which firms may lack face challenges in terms of financing. Firstly, the cost of the screening process through which the eligibility of the loan applicant is assessed and the risk involved in case of loan default may be high. Secondly, conditions attached to the credit such as high minimum deposits and administrative charges may make it inappropriate for the needs of some firms. Thirdly, the price or the cost of credit-high interest rate and other fees is a deterrent to many SMEs. Fourthly, priority lending of credit to specific SMEs in certain industries may end up diverting credit towards SMEs who may be less financially constrained. Lastly, self-exclusion may make some firms not to apply for credit because of the perception that they would be denied.

Lack of Access to Qualified Labour Force

Lack of adequate skilled and specialised labour also hinders the expansion of SMEs. This problem is exacerbated by the fact that, only few number of firms offer formal training to their labour force. Kayanula and Quartey (2000) note that insufficient supply of skilled workers can limit the specialisation opportunities, raise costs, and reduce flexibility in managing operations. Aryeetey et al. (1994) find that 7% of firms indicate that they have problems finding skilled labour, and 2% had same problems with unskilled labour.

Equipment and Technology

SMEs also lack access to appropriate technologies and information on available techniques of production. This forces many of them to rely on simple equipment. Aryeetey et al. (1994) find that 18% of the sampled firms old equipment among the major constraints to expansion.

Low Level of Domestic Demand

Many SMEs also cite low level of demand for their goods and services as a major obstacle to their income. For example, Baah-Nuakoh (2003) finds that low level of domestic demand is the second most serious obstacle facing small and medium sized firms after access to finance. This is due to the low level of income (Baah-Nuakoh, 2003).

Competition from the International Markets

SMEs also face fierce competition from international firms as a result of many substitutes goods imported into the country. Moreover, limited international marketing experience, poor quality control and product standardisation and little access to international partners, impede their expansion into international markets (Kayanula and Quartey, 2000).

Regulations

Furthermore, SMEs face problems relating to the legal and regulatory environment. According to the WBES (2013), SMEs cite cumbersome formalities involved in registering and commencing their businesses. The process tends to be very costly for some SMEs, especially in developing countries. Also, the lack of protection for property rights also affects SME access to foreign technologies (Kayanula and Quartey, 2000). Another regulatory requirement of the business environment is the payment of taxes. Firms complain not only of the rates of taxes but also the administration of tax system in general (WBES, 2013).

Customs and Trade Regulations

SMEs face constraints relating to customs and trade regulations, especially manufacturing firms that make use of imported inputs and also export their output on the international market. These include the longer days it takes to clear direct imports and exports through customs (WBES, 2013). Lastly, regulations relating to workforce are an obstacle to SMEs (WBES, 2013).

Corruption

SMEs also encounter problems with corrupt public officials. For instance, WBES (2013) reports that firms experience at bribery incidence in dealing with public officials. A number of firms indicate that they were expected to give gifts in securing government contracts and also to tax officials, and in acquiring operating and import licence (WBES, 2013).

Infrastructure

Electricity, water and transportation are also a major problem facing most firms in Ghana. It takes firms a longer time to have electricity and water upon application for connection. Moreover, most firms suffer frequent power outages and insufficient flow of water. In the WBES (2013), firms report losses due to electrical outages whilst other firms identify electricity as well as transportation as major constraints.

Managerial Constraints

Firstly, some SMEs lack qualified staff and managers to man their operations. Even though firms can make use of support services, Kayanula and Quartey, (2000) find that these services are often relatively costly and moreover, lack of information and time hinders SMEs from taking advantage of existing services.

Institutional Constraints

This relates to lack of cohesive associations to pursue the interest of SMEs coupled with weak linkage between SMEs and large enterprises for the market of their output. According to Kayanula and Quartey (2000), potential economies of collaborative arrangements in production and sales among SMEs have not been adequately explored and also there is limited interdependence among SMEs.

Even though all enterprises face these challenges, SMEs tend to be more constrained (Shiffer and Weder, 2001). Kayanula and Quartey (2010) attribute this to the difficulty of SMEs absorbing large fixed costs, the absence of economies of scale and scope in key factors of production, and the higher unit costs of providing services.

For instance, using private sector survey covering 80 countries and one territory, Shiffer and Weder (2001) find that the severity of these obstacles varies inversely with firm size. That is, small firms report more problems than medium-sized firms, which in turn report more problems than large firms. These obstacles are more severe for firms in Sub Saharan Africa (SSA), the Latin America and the Caribbean and transition economies (Shiffer and Weder, 2001; Beck and Cull, 2014).

2.5 Government Financial Support to SMEs

Interventions in support of SMEs are justified by economic research which has found that enterprises facing credit constraints are less likely to participate in growth-enhancing activities such as investment, marketing, hiring, exporting and importing (Holton et al., 2013). According to UNCTAD (2005), the case for government intervention to assist SMEs is based on the fact that numerous market failures prevent domestic enterprises from building capabilities because they cannot access finance, information, technology and markets. Hence, specific policies, programmes and institutional frameworks are needed to help SMEs overcome these failures.

Government measures to promote SMEs are aimed at making markets work efficiently, while providing incentives for the private sector to assume an active role in SME finance (IFC, 2011).

As a result, governments around the world have implemented a number of programmes to enhance SME lending which include subsidized or favourable loans, guarantees, and lines of credit by certain banks, especially public banks, usually for certain economic sectors (Stephanou and Rodriguez, 2008). These supports are in the form of interest rate subsidies offered to SMEs and other credit guarantee systems (De la Torre et al., 2008).

In Ghana, a number of sponsorship programmes have been funded by past and current governments through the banking and non-banking institution, with the aim of minimising financing constraints (Amonoo et al., 2003). These support schemes are given to highly performing firms, with qualified employees and good future prospects (Baah-Nuakoh, 2003). As noted by Mensah (2004), government has implemented a number of lending schemes to SMEs, either directly from government funds or with funds contracted from donor agencies. Examples of such schemes are: Austrian Import Program (1990), Japanese Non-Project Grants (1987-2000), Canadian Structural Adjustment Fund and Support for Public Expenditure Reforms (SPER).

The following schemes were also implemented to support the private sector especially SMEs: Business Assistance Funds (BAF) (1990), Ghana Investment Fund (2002); and the Export Development and Investment Fund (EDIF) (Baah-Nuakoh, 2003). The Fund for Small and Medium Enterprises Development (FUSMED) was also established in 1990 by the International Development Association of the World Bank to support SMEs in terms of establishment of new

firms, rehabilitation and expansion of existing enterprises and leasing of equipment (Baah-Nuakoh, 2003). Other important non-banking institutions established to promote the development of SMEs are the National Board for Small Scale industries (NBSSI) (1985) and Empresas Technologicas (EMPRETEC) Ghana Foundation (Amonoo et al., 2003). The interest rates charged by these institutions are usually pegged at 20 percent as compared to the average rate charged by private commercial banks (Amonoo et al., 2003).

Challenges encountered with the implementation of these schemes were that, the high collateral requirements deter SMEs from applying for them (Baah-Nuakoh, 2003). Moreover, these schemes require complex legal processes to be completed as part of the application procedures. These loan schemes are also centralised in Accra, making it difficult to be accessed by SMEs outside Accra (Baah-Nuakoh, 2003).

2.6 Conclusion

The significant role played by SMEs cannot be overemphasized. Though there are variations in the definition of SMEs, the common criteria used include number of employees, size of assets and sales turnover. Empirical studies show that even though SMEs face numerous challenges such as lack of access to finance, low demand for output, technology, raw materials, labour and management, infrastructure, institutional and regulatory obstacles, the problem of lack of access to finance still remains a binding constraint. Governments have taken steps to meet the financing needs of SMEs over the years.

CHAPTER THREE

LITERATURE REVIEW

3.0 Introduction

This chapter reviews extensively both theoretical and empirical literature on demand- and supply-side determinants of access to credit, both in developed and developing economies, with particular focus on Ghana. The definition and measurement of access to credit by SMEs is also examined. The theoretical underpinnings of SMEs' financing constraints are also discussed. This chapter also reviews the supply and demand for credit, focussing on the sources, determinants and the challenges faced by lending institutions.

3.1.0 Definition of Access to Finance

There is no universal definition of access to credit because there are different dimensions of what constitute access to credit. According to Claessens (2005), access to credit can be defined considering three factors: firstly, the availability of the financial service; secondly, the price or cost of the credit available, both explicit and opportunity costs; and thirdly, the range, type and quality of credit being offered. Access to finance has been defined as the 'absence of price and non-price barriers in the use of financial services' (World Bank, 2008). In other words, access to finance refers to the availability of supply of quality financial services at reasonable costs (Claessens and Tzioumis, 2006).

Hence, it becomes necessary to distinguish usage and access to finance. Ganbold (2008) explains that access refers to the supply of financial services, whereas use of the services is determined by demand and supply. Improving access to finance means improving the degree to which financial services are available to all at a fair price (Ganbold, 2008).

3.1.1 Measurement of Firms' Access to Finance and Financial constraint

Generally, it is not easy to measure access to finance. However, it is approximated by the financial depth (total loan outstanding/GDP or M2+/GDP) of a country because an approximately greater depth is likely to be associated with greater access to finance among firms (Ganbold, 2008). However, Claessens and Tzioumis (2006) note that because a well-developed financial system could provide access only to a limited number of firms, financial depth indicators such as M2+ need not be good measures of access to finance.

Claessens and Tzioumis (2006) further note that there are two main methods used to determine firms' access to finance, namely econometric analysis of their financial statements based on economic theory models and through firm-level surveys. For large firms with good financial data, econometric analyses of their financial statements are useful for measuring firms' access to finance. However, for small and medium-sized firms, surveys are used because of limited financial data, as most these SMEs are not obliged to publish detailed financial reports nor raise equity or debt in public markets (Claessens and Tzioumis, 2006). That is, the reliability of the

financial statements of these SMEs, especially in transition and developing countries is often questionable.

Empirically, a financially constrained firm could be identified through the sensitivity of their investment with respect to internal funds (Claessens and Tzioumis, 2006). Higher sensitivity of investment to internal funds suggests the presence of financing constraints as external funds are more costly than internal funds due to information asymmetries. Using balance sheet data, Beck and Cull (2014, p. 2) explain that “a firm is defined to be financially constrained if a ‘windfall’ increase in the supply of internal funds result in a higher level of investment spending”

Most studies on SMEs’ access to financing are based on firm-level surveys, which are based on the perceptions of entrepreneurs. Claessens and Tzioumis (2006), however, highlight the weaknesses of firm-level surveys used in measuring financing constraints. Firstly, both the dependent and independent variables used in empirical analyses often share a common parameter that is omitted in the surveys as a result of self-selection and moreover, the cross-sectional nature of those surveys is associated with simultaneity bias between survey variables. Secondly, there is absence of a unified conceptual framework for data collection in measuring and evaluating firms’ access to finance because of lack of consensus between theoretical models and empirical evidences on a commonly accepted framework for data collection. Thirdly, the definition of access to finance is somewhat ambiguous, as its measurement is influenced by several dimensions among which include reliability, convenience, continuity and flexibility.

3.2 Theoretical Framework: Stiglitz and Weiss' (1981) Credit Rationing Hypothesis

Theoretically, the problem of lack of access to credit among small firms can be explained through the theory of credit rationing propounded by Stiglitz and Weiss (1981). In their exposition, Stiglitz and Weiss (1981) explain that, lack of access to credit is due to imperfections in the financial market, resulting in credit rationing—a situation where either some applicants' loan applications are honoured and some rejected even though they possess similar characteristics and are willing to pay higher interest rate or their applications for credit are rejected because of the limited supply of credit.

Stiglitz and Weiss (1981) show that in equilibrium, the loan market can be characterised by credit rationing. This is due to information asymmetry in the loan market, which results in adverse selection—the sorting out of good borrowers from bad ones and moral hazard which concerns the actions of borrowers, which they also referred to as “incentive effect”.

Adverse selection results from the unequal probabilities of repayment by different borrowers. Hence, banks use interest rate as a means to distinguish good and bad risk borrowers. Stiglitz and Weiss (1981, p. 393) posit that, “the interest rate which an individual is willing to pay may act as one such device; those willing to pay higher interest rate may on average be worse risks; they are willing to borrow at higher interest rate because they perceive their probabilities of repaying the loan to be low”

They also note that moral hazard refers to the situation where the behaviour of borrowers may change after the loan contract has been made because borrowers may engage in undesirable actions which may lower the probability of paying back the loan. In their view, borrowers may

undertake “projects with lower probability of success but higher payoffs when successful” (Stiglitz and Weiss, 1981, p. 393).

Using demand and supply analysis, Stiglitz and Weiss (1981) explain the determination of equilibrium interest rate. The supply of loans is influenced by the bank’s expected returns at the ‘optimal bank rate’ defined as “the interest rate at which the expected return to the bank is maximized”. When there is excess demand for loans over supply, the interest rate rises. However, banks would not lend above the optimal rate because it is riskier to do so and moreover, the expected returns of banks would be lower.

The supply of loans is also influenced by the amount of loan, the amount of collateral or equity demanded by banks; however increasing collateral beyond an optimal value may reduce the returns of banks because of reduction in average risk aversion of borrowers or result in the undertaking of riskier projects. This is due to the fact that, there would be a reduction in the equity of borrowers who could undertake smaller projects with a higher rate of failure. Banks would therefore choose to deny loan applications because they are unable to distinguish between bad risks applicants from those successful applicants, resulting in credit rationing.

The theory of credit rationing is based on the assumptions that, the credit market is characterised by many banks and borrowers, both of whom are risk neutral and aim at maximising their profits. On the one hand, banks seek to maximise profit by the interest rate charge and the collateral they request from borrowers. On the other hand, borrowers also choose projects that maximise profit, while at the same time increase the probability of repaying the loan. The costs of these projects are assumed to be fixed and indivisible.

According to Stiglitz and Weiss (1981), interest rate serves as a screening device for differentiating good and bad risk borrowers. Increasing interest rates however, reduces the returns by banks because it worsens the pool of applicants who are willing to borrow from the banks. This is because the probability of loan defaults increases with an increase in interest rate. Hence, the expected return of the bank is not a monotonic function of interest rate and beyond the bank's optimal rate, the expected returns to the bank decrease with the increase in interest rate; interest rates affect the quality of loans made by banks.

Stiglitz and Weiss (1981) conclude that: (i) As the supply of funds increases, the excess demand for funds decreases but the interest rate charged remains unchanged, so long as there is any credit rationing (ii) Increasing interest rate or collateral requirements could increase the riskiness of the bank's loan portfolio either by discouraging safer investors or by inducing borrowers to invest in riskier projects and therefore could decrease bank's profits. Therefore under these circumstances, credit rationing takes the form of limiting the number of loans the banks make rather than limiting the size of each loan or increasing interest rate.

A number of studies have identified weaknesses of Stiglitz and Weiss' (1981) credit rationing hypothesis (Bester, 1985). For example, Bester (1985) points out that there is no empirical justification to support Stiglitz and Weiss' arguments that increasing collateral cannot be used as sorting device, based on the assumptions that smaller projects are more risky and decreasing the absolute risk aversion of borrowers. Bester (1985) argues that if the rate of interest and collateral are chosen simultaneously, it is possible to use different contracts as a self-selection mechanism; hence, no credit rationing will occur in equilibrium. Bester (1985) also argues that banks can

distinguish between the safe and risky borrowers by offering contracts with different combinations of interest rate and collateral.

Wolfson (1996) also finds that the probability of loan repayment is not always known to the borrowers and the banks. Stiglitz and Weiss' (1981) theory of credit rationing which assumes that both the borrowers and the banks know the exact probabilities of repayment of the loan cannot be supported by empirical evidence. This is due to uncertainties in the credit market. Therefore, borrowers may be credit rationed because projects they perceive as safe may be considered by banks as very risky.

Stiglitz and Weiss' (1981) also fail to offer alternative methods by which banks could solve adverse selection and the moral hazard problems. They fail to consider the possibility of money creation as instrument instead of credit rationing. According to Wolfson (1996), banks would adjust their reserves to meet demand for credit by creditworthy borrowers.

3.3 Empirical Literature on Reasons for Lack of Access to Credit among SMEs

A number of reasons have been cited for the lack of access to credit and the subsequent financial exclusion of SMEs. In explaining the lack of access to finance, Claessens (2005) considered two dimensions. Firstly, due to the financial institutions' specific constraints, high cost involved in providing physical infrastructure, especially in rural areas, lack of security in cash transfers and high transactions costs for small volumes, the provision of credit and other financial services to small households and firms may be constrained. Secondly, constraints of the institutional

environment, such as lack of technological innovation and distribution networks may affect the provision of credit to households and firms.

Generally, the following reasons have been cited for the lack of access to credit among SMEs: high-risk associated with SME lending; information asymmetry arising from SME lending; and the high administrative and transaction costs involved in SME financing (UNCTAD, 2005). In developing countries, these problems are often worsened by institutional factors such as the legal system and information infrastructure (Zavatta, 2008). For Beck et al. (2008), the significant differences that exist between SME financing in developed and developing countries are due to deficiencies in the contractual and informational frameworks in developing countries and less stable macroeconomic environment. In addition, financial sector policy distortions and lack of know-how on the part of banks are also reasons for SMEs' credit constraints (Gockel, 2003; Malhotra et al., 2007).

Information Asymmetries

It is not only difficult but also costly to obtain information about the credit worthiness of SMEs. Information asymmetries arising from SMEs' lack of accounting records, inadequate financial statements or business plans makes it difficult for creditors and investors to assess the creditworthiness of potential SME proposals (UNCTAD, 2005). Moreover, lenders lack access to the credit history and profile of potential SMEs. Lending institutions mitigate these information asymmetries by charging higher interest rates or they may decide not to lend altogether (Kempson et al., 2000).

High Risk Inherent in SME Lending

SME financing also poses high risks. SMEs are regarded by creditors and investors as high-risk borrowers because of insufficient assets and low capitalization, vulnerability to market fluctuations and high mortality rates (UNCTAD, 2005). In countries without strong bankruptcy laws or contract enforcement, banks have difficulty in enforcing repayment in case of default (UNCTAD, 2002). In addition, SMEs are also prone to internal management problems (Aryeetey et al., 1994). As a result of the perceived high risk associated with SME lending, they are required to provide collateral security which is often a major obstacle for new and young SMEs which are not well established (Zavatta, 2008).

However, contrasting study by Vos et al. (2004) indicates that SMEs are not riskier because they are self-select in undertaking business ventures that match their own areas of expertise and moreover, they are able to overcome risk through the development of technical skills and practical experiences.

High Transaction Cost Involved in SME Lending

Commercial banks often consider lending to SMEs involving high transaction costs due to the fact that small amounts require more time, effort, cumbersome administrative procedures; lack of understanding of SME needs; inability to assess creditworthiness; poor financial information which make SME financing a less profitable business (UNCTAD, 2002). According to Zavatta (2008), the problem is more severe in developing countries for reasons such as the lack of

adequate management information systems in financial institutions; the undeveloped state of the economic information industry; and the poor state of certain public services, such as the registration of property titles and collaterals. The transaction costs associated with processing and administering loans are, however, fixed, and banks often find that processing small SME loans is inefficient (Malhotra et al., 2007).

Institutional and Legal factors

Insufficiently developed legal systems prevent the development of certain financing instruments, including the use of collateral as a risk-mitigating element. For instance, legal provisions regarding security interests are of crucial importance in determining the efficacy of collaterals (Zavatta, 2008). Malhotra et al. (2007) observe that although leasing, factoring, and venture capital have been introduced in most financial markets, the lack of supportive legislation, regulations, and tax treatment has often restrained their growth. Also, stronger rule of law is associated with more effective private credit registries as enforcement of consumer rights that would allow individuals and firms to question and correct data in the registry is likely to result in better quality of data, and subsequently better predictive power of future borrower behaviour (Love and Mylenko, 2003). Lack of access to finance is the result of poor institutional and legal structures that facilitate the management of SME lending risk and the high cost of borrowing and rigidities of interest rates (Mensah, 2004).

Lack of Contract Enforcement

Problems relating to contract enforcement are also a major hindrance to SME lending. For instance, there are lengthy procedures for filing mortgages and pledges, and for ascertaining the status of certain assets, in addition to reported cases of corruption among personnel (Zavatta, 2008). Moreover, lending institutions are unwilling to provide credit when there is lack of enforceable property rights on such physical assets as land (Malhotra et al., 2007). Stronger creditor rights that guarantee secured creditors' priority in the case of default allow lenders to reduce the risk of future losses (Malhotra et al., 2007).

Lack of Information Infrastructure

Financial information infrastructures comprising accounting and auditing standards, credit reporting systems (credit registries and bureaus), collateral and insolvency regimes, and payments and settlement system, reduce information asymmetries and legal uncertainties that increase risk to lenders and constrain the supply of finance and improves financial access for firms, especially SMEs (IFC, 2011). Empirically, the existence of credit bureaus has been found to increase the availability of credit to SMEs. For instance, Love and Mylenko (2003) finds that the existence of private credit registries is associated with lower financing constraints and higher share of bank financing. They also find that small and medium firms tend to have higher share of bank financing in countries where private registries exist because they are more "opaque" and face larger information asymmetries.

Lack of Competition in the Banking Sector

With highly concentrated and uncompetitive banking sectors in many developing countries, as a result of restrictive government regulations, banks tend to adopt very conservative lending policies or to charge high interest rates (Zavatta, 2008). For instance, based on firm-level survey on 74 countries, Beck et al. (2002) find that highly concentrated and uncompetitive banking sectors are normally associated with higher financing constraints especially in countries with low levels of economic and institutional development. Public bank ownership, a high degree of government interference in the banking system, and restrictions on banks' activities worsens the impact of bank concentration on financing obstacles (Beck et al., 2002).

Poor Macroeconomic Management and Financial Sector Policy Distortions

Firms' ability to access finance is directly related to the presence of well-functioning financial markets that connect firms to lenders and investors willing to fund their ventures (Malhotra et al., 2007). Stephanou and Rodriguez (2008) point out that a favourable macroeconomic environment leads to relatively low levels of non-performing loans (NPL) for SME lending because strong domestic macroeconomic conditions boost liquidity and increase credit to the SME sector.

However, policies such as interest rate ceilings, public sector borrowings, directed public sector credit and guarantees discourage banks from lending to higher-risk borrowers and also, crowd out finance from the private sector which includes SMEs (Gockel, 2003; Malhotra et al., 2007).

In Ghana, a study by Gockel (2003) finds that lack of access to credit is the result of poor financial reforms in the pre- and post-independence periods. Gockel (2003) further notes that the financial sector reforms of the late 1980s, involved the active participation of government in the financial system mostly through state ownership of banks coupled with monetary requirements such as high reserve requirement and credit policies. The government control over credit allocation through subsidization at low interest rates, credit ceilings and sectoral credit control often results in moral hazard and adverse selection issues (Gockel, 2003).

Furthermore, “fiscal imbalances” that were financed by increased government borrowing in the domestic credit market also restricted credit to the SME sector (Gockel, 2003). This is because the increased government borrowing results in high interest rates which results in crowding out of the private sector in general and hence, retarding the SME sector.

3.4.0 Supply of Credit to SMEs

As emphasized by Krasniqi (2010), it is important to investigate both the supply- and demand-sides of small firm finance in order to enhance understanding of how small business owners/managers make decisions among the various financing options available and whether or not they are constrained by the availability of external finance. This section discusses the supply of credit to SMEs, focusing on various sources of credit to SMEs and the determinants of access to credit.

3.4.1 Sources of Credit to SMEs

Basically, there are two major sources of financing SMEs-internal and external sources. The internal sources are self-finance by the owner (s) of the SMEs, mostly through their savings and retained profits. The external sources of finance include borrowing from formal, semi-formal and informal sources (Osei-Assibey et al., 2012). Aryeetey et al. (1994) observe that even though information on the financial performance and capital structure of SMEs in Ghana has not been documented, existing surveys indicate that supplier credit and bank borrowing are the main sources of external SME financing.

Formal Sources of Credit

The formal sources of credit include the universal banks as well as Rural and Community Banks (RCBs) (Osei-Assibey et al., 2012). According to Aryeetey and Gockel (1990), the formal financial sector is dominated by commercial and development banks, which offer both short-term and long-term credit, but over 90 % of these credit facilities are of short-term in nature.

Bank Loan

This is one of the important sources of credit to SMEs, both in developed and developing countries. Banks' exposure to SMEs has grown significantly in recent years and currently comprises an important part of their commercial loan portfolio (Stephanou and Rodriguez,

2008). The SME sector is perceived to be highly profitable to banks (De la Torre et al, 2008; Stephanou and Rodriguez, 2008). For instance, a study by Aryeetey and Gockel (1990) of 1,000 market women indicates that 14.7% of them had ever taken credit from a bank.

Aryeetey and Gockel (1990) also identify four types of credit facilities provided by banking institutions. These are overdraft facilities, short-term loans, medium- and long-term loans, and group loans. A study by De la Torre et al. (2008) in Argentina and Chile shows that in addition to short-term loans and overdrafts which are geared toward financing working capital, banks also offer leasing and investment loans and pre-trade financing, document and cheque discounting as well as factoring.

Bank lending requires collateral and interest payment on the loan. A study by De la Torre et al. (2008) in Argentina and Chile finds that approximately 70% of the loans require collateral, and the collateral requirement represents, on average, 96% of the loan amount. However, collateral requirements are more flexible for larger enterprises and stricter for long term loan.

Semi-formal Sources Of Finance

The Semi-formal sources of finance include registered Non-Bank Financial Institutions (NBFIs) which are mostly the Savings and Loans Companies, credit unions and Micro Finance Institutions (MFIs) which provide credit and other financial services to SMEs. According to Osei-Assibey et al. (2012), these lenders, unlike conventional banks, appear more willing to

accept the greater screening and monitoring costs involved in overcoming information asymmetry.

Informal Sources of Credit

Aryeetey and Gockel (1990) define the informal financial sector as ‘participation in all commercial saving and lending activity taking place outside of formal or established financial institutions’ They are made up of a large number of financial institutions that are not regulated and fall outside all the banking laws of Ghana (Osei-Assibey et al., 2012). These are mainly dominated by the activities of money lenders, and “susu” operators. Other unconventional sources considered to be informal are personal resources such as selling of properties, or to request funding from relatives, barter for services, to lease or hire equipment and trade credit, etc. These informal sources provide limited amounts of credit to SMEs (ibid., 2012).

Susu

Aryeetey et al.(1994) identify two forms of susu—single-collector susu system and rotating susu system, also known as Rotating Savings and Credit Associations (ROSCA). These susu systems serve both as deposit and lending institutions to SMEs. Whereas with the single or individual collector susu system, individuals usually save with the collector who offer them credit on demand, the rotating susu system involves members of the same economic activity coming

together to form a saving club where the deposit or lump sum is paid to a member of the club in rotation (Aryeetey and Gockel, 1990).

Hence, the susu system provides not only an avenue for savings but it is also a source of credit to SMEs. A study by Aryeetey and Gockel (1990) of 1000 market women indicates that about 65 percent of the market women indicated that they had access to credit facilities from their susu collectors and an estimated 77 percent of these market women save with these susu collectors. This is because of the easy access to the collector who comes regularly; and the fact that collectors accept small sums.

A major problem encountered in dealing with the susu system is that savers sometimes fall victims to illegal susu operators. This is partly because usually, there is no signing of any undertaking between the susu collector and their clients. For example, Aryeetey and Gockel (1990) find that 40.3% of a sample of 1000 market women lost their money to a defaulting collector.

Money Lenders

This is made up of individuals who lend money out of their own resources. They are regulated by the Moneylenders Ordinance 1951 of Ghana. They include all such persons who lend a sum of money at interest or who lend a sum of money in consideration of a larger sum being repaid. Aryeetey and Gockel (1990) identify two major categories of money lenders namely those who are licensed Money lenders and those who operate without official authority. The ordinance

requires that any contract between moneylenders and their clients be supported by a written and signed memorandum which should contain all the terms of the contract including the date on which the loan was made the amount of the principal of the loan; and the rate of interest per annum, and the amount of such interest (ibid, 1990). Money lending is also characterised by high interest rates which is sometimes fixed at 100 percent at the end of the specified period. In other cases, the borrower has to pledge a valuable or some income-generating property against the amount borrowed which the lender has every right to use and enjoy all benefits accruing from the property until the amount is repaid (ibid, 1990).

Aryeetey and Gockel (1990) note that, although it is generally suspected that the informal financial sector in many African countries may be larger than the formal one, there is no accurate estimate of the two sectors, implying that weak links exist between them. This is because, there is a greater likelihood of obtaining credit facilities so long as people have maintained good savings records and there are not too many demands on the collector. They argue that the rationale for the continuing existence of the informal sector of the financial market derives from its dynamism both from developments within the formal sector and also from its own internal characteristics. As a result of the recognition of the growing importance of the informal financial market, they are required by the government to register their businesses for tax purposes.

3.4.2 Determinants of Access to Credit among SMEs

There are numerous research conducted on determinants of access to credit which indicate that small firms' lack of access to credit may result either from supply-side market failures due to rejection from the banks for lack of viability of the proposal or high risk and costs involved or from demand-side market failures due to insufficient information in the project proposal, high cost of bank credit etc. (Pandula, 2011). Ahmed and Hamid (2011) find that access to formal credit is a function of two main factors: (i) the availability of infrastructure to provide credit; and (ii) lending organizations' risk perception of the borrower. Thus, banks evaluate an establishment on the basis of its current financial position as reflected by its accounts or turnover.

This sub-section describes the factors that influence SMEs' access to credit. With regards to the determinants of access to credit several research work have been conducted (Kumah, 2011; Alhassan and Sakara, 2014; Osei-Assibey, 2014). According to Pandula (2011), financial institutions consider the creditworthiness of SMEs, which depends on firm-specific characteristics, owner/manager's characteristics and financial characteristics of the firm. Access to credit is therefore influenced by observable socio-economic characteristics of the owner(s) of the firm as well as firm's characteristics (Osei-Assibey, 2014).

3.4.2.1 Firm-Specific Characteristics that Determine Access to Credit

A recent empirical work by Alhassan and Sakara (2014) finds that the number of firm characteristics such as fixed assets possessed, the size and form of business as well as and sector

of business in the economy are important success factors in accessing bank finance in Ghana. Osei-Assibey (2014) finds that firm's age, asset structure and ownership of bank account increase the likelihood of having access to finance among rural non-farm enterprises in Ghana.

Firm's Performance

SME's performance is one of the criteria for assessing the creditworthiness of the firm. This is because performing firms are more likely to be able to pay back loans (Aryeetey et al., 1994). Firm's performance can be measured by several indicator among which include labour productivity; increase in sales or turnover ratios; profit and firm capacity utilization; and export growth over a given period of time (Aryeetey et al., 1994; Baah-Nuakoh, 2003; Bebczuk, 2004). Pandula (2011) uses the average annual sales growth for the past three years as measured by firm performance because it gives a better indication of financing needs than that of a single year. Evidence from empirical studies indicates that greater sales and profits are associated with greater access to credit (Aryeetey et al., 1994; Bebczuk, 2004). In fact, poor business performance is one of the reasons for lack of credit. Baah-Nuakoh (2003) finds that credit is the most severe constraint among declining and stagnant firms.

Firm's Innovation

Empirical study by Ahmed and Hamid (2011) indicates that innovation of the firm also significantly impacts on the firm's access to credit. On the other hand, based on a sample of 256

small firms who applied for bank loans, Freel (2007) finds that most innovative firms are less successful in loan markets than less innovative ones. This is because of the lender's perspective of risk and uncertainties associated with, especially product innovation.

However, these studies considered only loans from banks. Moreover, they differ in terms of how innovation is measured. Ahmed and Hamid (2011) defines innovative firms are as those which have introduced a new process only over the last three years. In addition to this measure, Freel (2007) also uses several proxies such as research and development expenditure as a proportion of turnover and the proportion of turnover and profits from newly introduced products/process in the last three years as measures of firm innovativeness.

Firm's Size

The size of a firm is also one of the criteria for assessing its creditworthiness by financial institutions (Pandula, 2011; Kumah, 2011). Empirical studies by Pandula (2011) indicate that small firms are more credit constrained than large firms due to their inability to provide financial information requested by the financial institutions for screening and in most cases, they lack audited financial statements. In addition, smaller firms have less fixed assets to offer as collateral; and moreover, they have high risk of failure rate compared to large firms. This finding is corroborated by that of Ahmed and Hamid (2011) which finds that small and medium firms are, respectively, 12.2 and 7.4 percent less likely to have access to external finance compared to large firms, all things being equal. Aryeetey et al. (1994) also find that medium-sized enterprises and older firms are provided with credit three times more often than smaller ones.

However, Vos et al. (2004) argues that the popular notion that small firms face financing constraint is not supported by empirical evidence. Vos et al. (2004) argues that bigger SMEs have more alternative sources of funds because they usually have superior track records to convince prospective creditors and investors for loan approval.

Firm size is usually defined as the number of full time employees of the firm, from top to lower level management. According to Pandula (2011), the use of employment rather than financial measures as a proxy for firm size is because the number of employees is easily understood and readily visualised, and moreover, it is the common measure used by many government and other formal institutions like the banks. However, the use of financial measures of firm size would, overtime, need to be adjusted for inflation.

Firm's Location

One important factor that lending institutions, especially formal financial institutions take into consideration is the proximity of the firm to their formal place of establishment (Kumah, 2011). Ahmed and Hamid (2011) find that there is a significant relationship between the location of a firm and accessibility to credit. In their study, Ahmed and Hamid (2011) find that firms located in metropolitan cities have a higher probability of access compared to other firms located in rural areas. This is due to the nature of the rural market, which is very limited and dispersed (Deakins et al., 2010). Pandula (2011), defining firm location by its population density, however, did not find evidence of any significant relationship between the location of a firm and the probability of having a bank loan due to the closeness of firms' location to a market.

Firm's Age

A number of studies have argued that older firms face fewer constraints in accessing credit compared to newer firms. For instance, Beck and Cull (2014), find that older firms with more than 15 years of operation, are more likely to have access to a loan than mid-aged firms with between 6 and 15 years of operation, which are in turn more likely to have a loan than young firms with 5 or less years of operation. This is because older firms tend to have greater reputation which increases the chances of accessing credit (Osei-Assibey, 2014).

Aryeetey et al. (1994) find that, only 10 % of start-up firms in Ghana could obtain bank loans. Baah-Nuakoh (2003) also finds that access to finance is a severe constraint among new and mature enterprises. This is because the lack of adequate information on the financial performance of new and young firms makes it difficult for lenders to approve their credit demand (Adomako-Ansah, 2012). Also, the information required by the lenders at the time of granting credit may be limited for younger firms due to lack of established track record making the transaction costs associated with lending to younger firms relatively higher (Pandula, 2011). Moreover, new and younger firms are less likely to meet the collateral requirements of the banks because they have not accumulated sufficient fixed assets (Pandula, 2011; Adomako-Ansah, 2012).

Industry/Sector of the Firm

Empirical studies indicate that firms in services sector are more likely to access credit compared to their counterparts in the agricultural sector due to the low level of risk and relatively rising

sales level and revenue associated with the former (Kumah, 2011). Also, Deakins et al. (2010) find that manufacturing SMEs have less access to credit because they are more information is required of them, particularly in situations involving new products, new technology and diversification. This finding is consistent with that of Baah-Nuakoh (2003), whose study of 200 manufacturing firms in Ghana, indicates that finance is a severe constraint among firms manufacturing wood, garments and furniture.

Firm's Asset Structure

Collateral security is a very important determinant of access to credit, as emphasized in the literature on SME finance (Stiglitz and Weiss, 1981; Berger and Udell, 2006). This is due to the high risks and transaction costs associated with SME lending (Berger and Udell, 2006). Collateral security, therefore serves as protection for lenders against defaulting borrowers. Empirically, firms' asset structure is often measured by the firm's possession of tangible fixed asset (Kumah, 2011; Pandula, 2011; Osei-Assibey, 2014). This is because fixed assets can be used as collateral, which reduces potential losses of the bank and discourages moral hazard behaviour of borrowers (Bebczuk, 2004). Conversely, it is argued that the more liquid the assets of the firm are, the easier it is for them to withdraw the money from the firm and, hence, transfer their risk to the lender in the event of default.

For instance, Osei-Assibey (2014) finds that firm's ownership land, which is used as a proxy of its asset structure, is a significant determinant of access to credit among rural non-farm enterprises in Ghana because this collateral saves the lenders in case of default by borrowers.

This finding confirms a study by Adomako-Ansah (2012), which shows that out of a number of 15 banks and non-bank institutions in Ghana, 13 of them consider collateral as the most important factor in approving loans.

However, Pandula (2011) finds no significant relationship between asset tangibility (measured as the ratio of tangible net fixed assets to total assets) and access to credit among 228 Sri Lankan SMEs. This is because asset tangibility does not always reflect the availability of collateral since the personal assets of the proprietor or partner which represent an important element in the security offered for bank loan are not shown in the balance sheet of the business. This finding is consistent with the study of Bebczuk (2004) who finds that asset tangibility of the firm is not a significant determinant of access to credit because banks are willing to take a risky position when making loans to SMEs.

Firm-Bank Relation

The relationship between SMEs and the lending institutions also affect the ease with which credit is accessed (Berger and Udell, 2006). This is because, a long lending relationship reduces the severity of the informational asymmetries experienced by the bank by providing it with information on the borrower's credit history, her account movements, and the personal behaviour of the firm's manager (Bebczuk, 2004). SMEs with established relationship with suppliers of credit find it relatively easier to access funding, especially from informal sources and moreover, banks support established businesses with which they have an existing personal relationship (Deakins et al., 2010). As noted by Vos et al. (2004), it is easier for SMEs to obtain capital from

existing lenders as compared to new creditors due to the establishment of social networks and firm reputation.

The relationship between firms and financial institutions is often measured by the firm's ownership of savings bank account (Osei-Assibey, 2014). For instance, Osei-Assibey (2014) finds that relationship between firms and financial institutions, as measured by ownership of bank account is positive and statistically significant factor in accessing credit from formal financial institutions. This is because this relationship enables banks to assess the credit history and cash flow of firm; hence, reducing transaction costs of generating information on firms. Also, ownership of bank account implies that the borrower may be financially literate and may be able to repay loan.

Conversely, Bebczuk (2004), studying the determinants of the access to credit for 140 Argentine firms, finds that even though length of lending relationship increases the probability of accessing credit, the relationship is not statistically significant. This is because banks are more willing to provide credit to SMEs with good investment opportunities.

3.4.2.2 Characteristics of the Owner that Determine Access to Credit

The characteristics of the owner are also important factors considered in SMEs' loan assessment in order to determine their credit worthiness and ability to repay loans (Pandula, 2011; Osei-Assibey, 2014). This is based on the human capital theories which establish a relationship between the characteristics of the owner and the success rate of their firms, and hence, the ability

of repaying loans. Thus, owner's characteristics such as age, gender, educational level, experience and skills of the owner are significant determinants of access to finance. For instance, Alhassan and Sakara (2014) find that the firm owner's experience in credit use and attitude towards risk are factors that increase the SMEs' access to credit in Ghana.

Owner's Gender

Empirical studies by Cole and Mehran (2009) on the relationship between gender differences in the ownership of privately held U.S. firms and the availability of credit indicates that, female-owned firms are significantly more likely to be credit constrained because they are more likely to be discouraged from applying for credit. However, Beck and Cull (2014) observe that female-managed firms are also more likely to have credit than male-managed firms in Sub-Saharan Africa. In Ghana, studies by Kumah (2011) and Osei-Assibey (2014) show no significant gender difference in access to credit. This is because financial institutions tend to be fair and non-discriminatory in their provision of credit to SMEs.

Owner's Level of Education

The owner's level of education also increases the probability of SMEs' access to credit. This is because highly qualified owners/managers of SMEs are more efficient in their work and moreover, providers of funds have more confidence in those with higher academic qualifications than those with lower levels of qualification (Berger and Udell, 2006). Owner's education is used

as a proxy for managerial ability, which leads to greater efficiency and ability to attract a loan (Pandula, 2011). Educated managers/owners are able to understand the loan application procedures, present positive financial information and build closer relationships with their bankers (Pandula, 2011).

In a study, Ahmed and Hamid (2011) finds that owner's level of education is positively and significantly related to probability of access to credit because firms in which the top manager has a bachelors or a post graduate degree have a greater likelihood of access to credit compared to those firms in which the top manager is not a graduate. Similarly, a study by Zarook et al. (2013), using 557 firms in Libya also indicates that owner/manager's level of education impacts significantly on access to credit-a year's increase in owner's level of education increases their access to finance by 0.80%.

Owner's level of education is measured by the number of years spent by the owner/manager of the business in formal education-whether owner/manager did complete secondary, secondary school, vocational training and some university, graduate degree and/or postgraduate degree. However, most SMEs owners in developing countries tend to have low level of formal education. Most firm owners learn their trade through apprenticeship with an experienced master (Aryeetey et al., 1994).

Owner's Managerial Experience and Skills

Empirical studies by Ahmed and Hamid (2011) indicate that the experience and managerial competency of the firms manager/owner implies quality of human capital which would likely ease interaction and facilitate negotiations with the providers of credit. A study by Zarook et al. (2013), find that a percentage increase in manager's years of experience increases access to finance 1.062 percent. Owner's managerial experience and skills is measured by the number of years they have been in operation.

Deakins et al. (2010) note that young and inexperienced SME owners tend to be credit constrained as a result of factors such as limited security, lack of personal resources, limited trading records, credibility and alternative sources of finance.

Owner's Affiliation or Networking with Business Association

Several studies have indicated that membership with an association increase SMEs' access to finance (Vos et al., 2004; Pandula, 2011, Kumah, 2011). This is because group liability is preferred by financial institutions especially microfinance institutions because it mitigates both the adverse selection and moral hazard problems which results in credit market failures (McKenzie, 2009). Group lending increases a firm's access to credit because group members have the incentive to screen and monitor their group members to ensure that they invest their funds wisely (McKenzie, 2009). Owner's affiliation is defined as belonging to and participating in any business or social group with similar characteristics and financing needs (Pandula, 2011,

Kumah, 2011). Pandula, (2011) finds that networks ease SME's access to credit because affiliation to social ties or professional associations allows SME operators to establish relations with bankers.

3.5.0 SMEs' Demand for Credit

Access to finance is determined not only by supply-side factors but also by demand-side factors (Krasniqi, 2010). According to Krasniqi (2010), the demand for credit is consists of a two-step process. Firstly, the entrepreneur must have the willingness to grow and hence, decide whether to apply for external credit or choose to finance its project by internal funds and Secondly, the firms has to fulfil the requirements of the loan such as sound financial information, business plan, collateral, and the ability to absorb these loans.

As observed by Gregory et al. (2005), SMEs' demand for finance focuses on their capital structure, because small businesses have a unique capital structure different from those of large enterprises. Gregory et al. (2005) identify the following theories proposed on the capital structure of small enterprises: agency cost theory by Jensen and Meckling (1976); pecking order theory by Myers (1984); and finance growth cycle theory by Berger and Udell (1998). Although, these theories explain the corporate investment behaviour of firms, their approach based on the hierarchy of sources of finance can be easily applied to small firms (Krasniqi, 2010).

3.5.1 Empirical Literature on Determinants of SMEs' Demand for Credit

Empirical studies identify credit conditions such as interest rates, maturity, collateral requirements and lending procedures as important factors that explain SMEs' demand for credit as these factors are perceived to constrain their demand for credit (Stephanou and Rodriguez, 2008).

Amonoo et al. (2003) find that demand for credit among firms in Ghana is also influenced by interest rate charged as well as the owners' equity and firm's annual profit. There is a negative relationship between interest rate (defined as the lending rate at which SMEs borrow from lending institutions) and SMEs' demand for credit and loan repayment at both bank and non-bank financial institutions. Amonoo et al. (2003) also find that owner's equity is also correlated with SMEs demand for credit as financial institutions favour of enterprises that own greater share of financial capital. Thus, small firms in Ghana mostly consider factors such as easiness, flexibility, affordability, availability and successful outcomes of loan demand (Osei-Assibey et al., 2012).

Demirgüç-Kunt et al. (2004), find that incorporated firms are more likely to borrow than unincorporated ones because unlimited liability increases the risks borne by the owners of unincorporated enterprises. As a result of this increased risks, the owners will be unwilling to borrow enough to fund investment opportunities that would have been profitable in the absence of unlimited liability.

A study by Kimuyu and Omiti (2000) of the institutional impediments to access to credit by micro and small scale enterprises in Kenya finds that inclination towards seeking external funds

is explained by attributes of entrepreneurs and enterprises. Firstly, there is a positive correlation between firm's size and level of demand for credit because of the need for increase working capital by large firms (Kimuyu and Omiti, 2000). Secondly, the likelihood of applying for credit is higher among older enterprises since they are able to build contacts and reputation needed in seeking out and making use of credit. In addition, formally registered enterprises are more likely to borrow significantly than the informal ones because most unregistered firms are characterised by low productivity, inadequate access to infrastructure services and poor property rights over their business premises. Moreover, there is a greater incidence of loan application by female proprietors and among enterprises located in urban areas than by male entrepreneurs and those located in rural Kenya. Sole proprietorship type of ownership are less inclined to seek out credit relative to enterprises under other ownership structures as they are less prone to risk taking. Furthermore, entrepreneurs who belong to a support group borrow more than those who do not because of the externality enjoyed by group members. In summary, older, more educated entrepreneurs operating older, larger, and/or registered enterprises are more likely to seek-out external credit.

These findings are confirmed by a similar study by Messah and Wangai (2011), who investigate factors that influence demand for credit among small-scale investors in Kenya. The study seeks to determine the impact of demographic as well as socio-economic factors on firm's demand for credit or not. Their study finds that entrepreneurs who are 40 years and above, and are more educated, with few dependants and with a higher business income are more likely to apply for credit from formal credit institutions. Thus, socio-economic factors also determine whether

credit is applied for, the amount applied for, the amount of credit provided, and credit rationing (Messah and Wangai, 2011).

3.6 Conclusion

Empirical studies show that SMEs face numerous challenges among which include access to credit. The reasons for credit constraints are explained through the theory of credit rationing. Moreover, empirical studies indicate that characteristics of the firm as well as that of owners and managers are important determinants of demand and supply of finance to SMEs.

CHAPTER FOUR

RESEARCH METHODOLOGY AND FINDINGS

4.0 Introduction

A review of the literature on SMEs' finance indicates that their demand and access to credit is influenced by characteristics of the firm as well as that of owners and managers. This chapter describes the conceptual framework underlying this study. It also presents the estimation of the determinants of demand and access to credit through the heckman probit selection method, using data from the World Bank Enterprise Survey (2013). Lastly, this chapter concludes with the discussion of findings from the empirical estimations of these determinants. These factors include owner gender, years of experience, firm age, size, registration, etc.

4.1 Conceptual Framework

Based on previous studies (Pandula, 2011; Kumah, 2011), the study conceptualizes that access to credit by SMEs is influenced by firm-specific attributes and owner-manager characteristics. This is because financial institutions assess the firm's creditworthiness and ability to repay loans based on these factors. Lending to SMEs involves risks due to problems of information asymmetry. Information on these factors is considered important by financial institutions in their loan evaluation process (Krasniqi, 2010; Pandula, 2011).

Firm specific attributes such as age, size, ownership type, industry sector, performance, location, innovation, registration, ownership of bank account and audited financial record affect not only the likelihood of applying for credit but also the chance of accessing credit. Also, owner-manager characteristics such as gender, educational level, and experience affect both demand and supply of credit.

4.2 Method of Data Analysis

The study employs Heckman probit regression with sample selection to estimate the factors that influence firm's access to credit and the determinants of likelihood of applying for credit among SMEs in Ghana. In this study, firms are said to have access to credit only if they have applied for credit and their application has been approved. However, as noted by Krasniqi (2010), firm's access to credit can be estimated if and only if they applied for credit. It would be difficult to estimate the access to credit for firms that did not apply for credit for various reasons.

The decision to apply or not to apply for credit is made by the individual firms. Some firms may choose not to apply for credit because they thought that they would be denied whilst for other firms, features of the loan such as application process, interest rate and maturity may deter them from applying for credit. Thus, firms that did not apply for credit constitute a self-selected sample and not a random sample. Therefore, there is a likelihood that estimations based on only firms that did apply for credit will overestimate the access to credit for the whole population of firms as a result of selection bias (Cuddeback et al., 2004).

According to Heckman (1979), sample selection bias results from self-selection by the respondents who are being investigated; and non-random samples selected by analysts or data processors. Hence, estimations based on this selected sample do not give a correct prediction of the true population being estimated because analysis is not based on a randomly selected sample (Heckman, 1979). This results in specification error. This implies that estimations based on a sample of only firms that have applied for credit would give rise to biased estimates of access to credit (Krasniqi, 2010). This selection bias can be corrected through the use of Heckman probit regression with sample selection model.

The Heckman selection model is used in a situation where there are two models (for example, Y_1 and Y_2) in which the explanatory variables of the first model (Y_1) can be observed if only Y_2 can be observed. That is, $Y_1 = 1$ if $Y_2 > 0$ and $Y_1 = 0$, if otherwise. In other words, the Heckman selection model is used when a researcher is dealing with a subsample and the unobservable factors determining inclusion in the sample are correlated with the unobservable factors influencing a variable of interest (Vella, 1998). Thus, sample selection bias would occur when the unobservable owner and firm characteristics that determine a firm's demand for credit is correlated with the unobservable factors that influence firm's access to credit. This implies a relationship between demand for credit and access to credit. As cautioned by Vella (1998), failure to include an estimate of these unobservable factors would lead to incorrect inferences about the observable factors that influence the variable of interest, which, in this study, is access to credit.

The model is based on the following assumptions. Firstly, error terms in both models are normally distributed with mean 0, constant variances and are correlated. Secondly, the error terms are independent of the sets of explanatory variables in both equations. Therefore, the use of Ordinary Least Square (OLS) estimation of the parameters, based on the sample observed, will lead to inconsistent estimates because of the correlation between the error terms of two models (Vella, 1998).

The likelihood ratio test is used to detect whether there is selection bias. This is based on the null hypothesis that there is no correlation between the error terms of both the outcome model and the selection model (StataCorp, n.d.). If the value of the correlation coefficient is statistically different from zero, the null hypothesis is rejected. This implies that the model is affected by selection bias. This provides justification for the use of heckman probit selection method.

The heckman probit sample selection method of estimation gives consistent estimates because it eliminates the specification error of the censored samples (Heckman, 1979). The estimates are consistent and asymptotically efficient. It also provides estimates which are close to the maximum likelihood estimates. Moreover, it is simple and flexible (Heckman, 1979).

4.3 Model Specification

Following the study of Krasniqi (2010), the model used for the study is specified as follows:

$$ACCESS_i = \beta_i (OwnerCharacteristics, FirmCharacteristics) + \varepsilon_i \dots\dots\dots (1)$$

$$DEMAND_i = \beta_i (OwnerCharacteristics, FirmCharacteristics) + \mu_i \dots\dots\dots (2)$$

Where:

- Equations (1) and (2) represent the outcome and selection equations respectively.
- $ACCESS_i$ is the probability of an individual firm accessing credit, which is assigned a value of 1 if the firm has its application for credit approved and 0, if otherwise. This represents the dependent variable of the model of interest.
- $DEMAND_i$ is the probability of an individual firm applying for credit, which is assigned a value of 1 if the firm has applied for credit and 0, if otherwise. This represents the dependent variable of the selection model.
- $OwnerCharacteristics$ is a vector of explanatory variables that denote characteristics of owner or top manager that influence both firm's demand and access to credit. $OwnerCharacteristics = \{\text{owner's age, experience}\}$.
- $FirmCharacteristics$ is a vector of explanatory variables that represents the specific characteristics of the firm that influence both firm's demand and access to credit. $FirmCharacteristics = \{\text{firm size, age, industry sector, performance, registration, innovation, ownership of bank account, asset structure, location and having audited financial statements}\}$.
- β_i is a vector of parameters in the model.
- ε_i and μ_i are the error terms which represent other factors which affect access to credit and credit demand respectively but cannot be observed.

In this case, the firm is observed to have its application for credit approved if and only if it has applied for the credit. That is, $Prob (ACCESS_i) = 1$ if and only if $Prob (DEMAND_i) = 1$. The assumption underlying this model is that the error terms are normal and independent of the explanatory variables X_i . That is, $(\epsilon_i, \mu_i) \sim N(0, 1)$ and there is correlation between the error terms. That is, $corr(\epsilon_i, \mu_i) = \rho$.

The selection equation should contain at least one variable that is not in the outcome equation in order to ensure that the model is well identified (StataCorp, n.d.). Hence, to ensure consistent estimation of the parameters of the model, the explanatory variables that influence a firm's demand for credit must exceed those influencing firm's access to credit. Following a study by Krasniqi (2010), this study includes firm's future expansion plans which influence firms' demand for credit but does not have direct influence on access to credit. According to Krasniqi (2010) future expansion plans require future increases demand for credit to finance investment projects. Additionally, firm's export status is included because capital requirement of firms engaged in export induces them to apply for credit.

4.4 Definition and Measurement of Variables

The variables used for the study are defined as follows:

- **ACCESS** is the dependent variable for outcome model of interest. It is defined as a dummy variable which takes the value of 1 when loan is approved and 0, if otherwise. In this study, firms are said to have access to credit if and only if they have they applied for credit and their

application has been approved. SMEs that have their loan application approved are considered as having access to credit while those whose loan application has been rejected do not have access to credit. This variable is based on the outcome of the most recent application for a line of credit or loan by a firm.

- **DEMAND** is the dependent variable of the selection model which indicates whether or not a firm has applied for a loan or line of credit in the fiscal year of 2012. It is defined as a dummy variable that is assigned a value of 1 if a firm has applied for loan and 0, if otherwise. Firm's demand for credit is based on whether they have applied for credit only in the previous year.
- **OWNER'S GENDER**: This refers to the sex of the owner or top manager of the enterprise. This is a dummy variable which is assigned 1 if the firm is owned or managed by a female, and 0 if male owned. Gender of the owner or manager is included as an explanatory variable because of the differences in efficiency and performance levels of male- and female-owned firms which affect the firm's ability to repay loans. According to Cole and Mehran (2009), private firms owned by women in America are efficient but they tend to more credit constrained than male-owned firms.
- **OWNER'S EXPERIENCE**: This variable measures the number of years that the owner or top manager has spent on the job. Owner's experience is measured as a continuous variable. The experience of the owner or manager of a firm is a direct indicator of the level of efficiency of that firm and ability to repay loans [Pandula (2011); Kumah (2011)]. Therefore, financial institutions will be more willing to give out loans to experienced manager than inexperienced

ones because the former has a higher probability of success. More experienced owners are expected to have better access to credit.

- **FIRM AGE:** This is variable measured by the number of years the firm had been in operation. It is measure as a continuous variable. The age of a firm is included because it gives an idea about the perpetuity of the firm. According to Osei-Assibey et al. (2012), the age of a firm is a measure of its reputation. Hence, it is expected that the older a firm is, the higher its access to credit.
- **FIRM SIZE:** The variable is defined by the number of permanent, full-time employees including managers of the enterprise as at the end of fiscal year 2012. It is measured as a continuous variable. The size of a firm gives an insight into the value of its assets which can be used as collateral in accessing credit (Pandula, 2011). It is expected that larger firms would have better access to credit.
- **FIRM PERFORMANCE:** This is measured by the growth in actual annual sales revenue of all products and services of the enterprise. The performance of a firm, in terms of sales turnover and profit can be used to assess its creditworthiness as performing firms have a higher probability of repaying the loan (Baah-Nuakoh, 2003). Therefore it is expected that the higher the performance of a firm, the better its access to credit. In the survey, firms were asked to indicate their actual sales revenues in years 2012 and 2010. This variable is constructed based on the differences in annual sales revenue between these periods. It is measured as a dummy variable assigned 1 if the firm has an increase in sales and 0, if otherwise.

- **INDUSTRY SECTOR:** This variable represents sector of activity of the enterprise. It is defined as a dummy variable which is assigned 1 if the firm is engaged in manufacturing and 0 if the firm is engaged in retail and services. The firm's sector of operation affects their access to credit because of the risk and profitability involved and their ability to pay back loans (Kumah, 2011).
- **AUDITED FINANCIAL RECORD:** This variable is defined as a dummy variable which is assigned a value of 1 if the enterprise has an audited financial record and 0, if otherwise. This variable is used because it indicates the firm's transparency, which lending institutions can use to assess the creditworthiness of a firm (Krasniqi, 2010). Audited accounts build confidence in financial institutions since it provides information on the financial performance of the firm. Also, firms with audited financial records can provide it when seeking credit from financial institutions.
- **FIRM REGISTRATION:** This is a dummy variable which is assigned a value of 1 if the enterprise has been registered formally with the Registrar General's Department or with other appropriate authorities and 0, if otherwise. Firm's formality status does not only increase its chances of seeking credit but also having access to credit. This is because financial institutions can have information about the owners and their operations, based on the certificates of incorporation provided by registered firms as evidence when applying for credit. This can be used to assess their creditworthiness.
- **FIRM LOCATION:** This is a dummy variable which is assigned a value of 1 if the enterprise is located in the business or industrial city such as Accra and Tema and 0, if otherwise. Firm's location also has impacts on its ability to have access to credit because the proximity of the firm

to financial institutions is used as a measure of its creditworthiness due to moral hazard problems (Kumah, 2011).

- **ASSET STRUCTURE:** This is proxied by land ownership by the enterprise. It is measured as a dummy variable which is assigned a value of 1 if the firm fully owns the land on which it operates and 0 if, otherwise. This variable is used because the ownership of land which is a tangible fixed asset can be used as collateral for loan, hence is a measure of credit worthiness of a firm (Osei-Assibey, 2014).
- **FIRM INNOVATION:** This is also measured as dummy variable which is assigned a value of 1 if the enterprise has introduced new or significantly improved products or services or improved methods of manufacturing products or offering services during the last three years. Innovation in firm is expected to increase the demand for credit because of the capital requirement needed in adopting and adjusting to new technologies and changing situations. Also, firms which are innovative are expected to have increased access to credit because they are likely to perform well in terms of sales and profits; hence, they are more credit worthy than less innovative firms.

Table 1: Description and Measurement of Variables and Expected signs

Dependent Variables	Description and Measurement	Expected signs
<i>ACCESS</i>	Dummy: outcome of recent loan application; 1, if firm's application for credit is approved and 0 if otherwise	
<i>DEMAND</i>	Dummy: 1, if firms has applied for credit in the last fiscal year and 0 if otherwise	
Independent variables		
Owners Gender	Dummy: sex of owner or top manager of the firm: 1 if is a female and 0, if otherwise.	-/+
Owners Experience	Continuous variable: years of business experience of owner or top manager of the firm	+
Firm Size	Continuous variable: Number of full time employees.	+
Firm Age	Continuous Variable: Number of years that the firm has been in operation.	+
Industry Sector	Dummy: Sector of activity of firm 1 if manufacturing firm and 0 if otherwise.	-/+
Performance	Dummy: Sales or turnover of firm: 1, if firm experienced positive sales growth and 0, if otherwise	+
Formality status	Dummy: 1, if firm if formally registered and 0, if otherwise	+

Table 1 (cont'd)

Independent Variables	Description and Measurement	Expected signs
Innovation	Dummy variable: 1, if firm has introduced new or improved products or services or method of manufacturing products or offering services over the past three year and 0, if otherwise	+
Firm-bank Relation	Dummy: 1, if firm owns either current or savings account and 0, if otherwise.	+
Asset Structure	Dummy: Ownership of land 1, if firm fully owns the land on which it operates and 0, if otherwise.	+
Audited financial statement	Dummy: 1, if firm has its financial statement checked and certified by an independent external auditor and 0, if otherwise.	+
Location	Dummy: 1, if firm is located in the Accra or Tema and 0, if located in Takoradi and Tamale	+
Future Expansion plans	Dummy: 1, if firm purchases fixed assets in the previous year and 0, if otherwise.	+
Export status	Dummy variable: 1, if the firm sells its main product in the international market and 0, if products are sold locally.	+

Source: Author's Construct Based on Literature

The World Bank Enterprise Survey (WBES, 2013) used stratified sampling technique. Firms were stratified by sector of activity, firm size and geographical location. The degree of stratification by sector of activity is determined by the size of the economy as measured by the Gross National Income (GNI). Firm size is stratified on the basis of number of employees as follows: small firms (5-19 employees), medium-sized firms (20-99 employees) and large firms (100 or more employees). Under geographic location, firms were stratified based on the distribution of non-agricultural economic activity of the country which takes place mostly in the main urban economic centres of the country. The survey was carried out through face-to-face interviews with owner and managers of firms.

The enterprise survey studies only non-agricultural firms which are formal and privately owned. The firms covered by the survey are those in the manufacturing, retail and services industries, including hospitality, construction transportation and communication firms. Firms excluded from the survey are agricultural, extractive and fully government-owned firms. In addition, firms with less than 5 employees are excluded because of lack of adequate data on their operations. This is also due to the fact that most of these micro firms are informal.

The World Bank Enterprise Survey (WBES, 2013) assesses the business environment in which enterprises in the private sector operate for purposes of impact assessment of reforms. This includes the constraints on enterprise's performance and growth in these economies, based on the firm owners' experiences and perceptions of the business environment. The survey therefore provides information concerning the business environment and factors that are challenges to firm's growth such as infrastructure, competition, crime and bribery, land and permits, and

government-business relations. Other obstacles reported by firms include the costs of inputs and labour, licensing, trade, capacity utilization, taxation, informality, innovation and technology.

The survey data also provides information on the characteristics of the firms such as the composition of labour force, type of ownership, sector of operation, location, sales performance, assets ownership, etc. Also, characteristics of the owners and managers of firms, such as their gender of the top manager and years of work experience are provided in the data.

A major limitation of the Enterprise Surveys is that in the majority of the cases the resulting data sets represent only firms that were willing to participate in the survey. Respondents were reluctant in providing data on their performance such as sales, employment, cost of labour, cost of intermediate inputs and raw materials, net book value of fixed assets, and purchase value of fixed assets. The problem of non-response or refusal to answer the questionnaires was however, solved by substituting with respondents who are more willing to answer them.

On access to finance, the study provides information on indicators such as access to financial services, the sources of credit and loan requirements. In addition, the survey also provides some information on how enterprises finance their working capital and fixed investment. The survey reports about fifteen indicators which measure the availability of financing. These indicators are created by computing the weighted averages of businesses' responses to questions in the survey using sampling weights.

This study adopts the definition of SMEs based on the number of employees, as given by the World Bank Enterprise Survey (WBES, 2013). Small enterprises are defined as firms employing five (5) to nineteen (19) workers. Medium-sized enterprises are defined as firms employing

between twenty (20) to ninety-nine (99) workers. This definition captures a large number of enterprises under the SMEs category.

This definition is in contrast with the current definition used in Ghana by the NBSSI, which defines small enterprises as firms employing between 6 and 29 workers as well as the definition used by the Ghana Statistical Service (GSS), which also defines small-scale enterprises as those employing up to 9 employees; medium-scale enterprises as those employing between 10 and 29 workers; and large enterprises as those employing 30 or more employees (Gockel, 2003).

4.5 Research Findings and Discussion of Results

This sub-section presents the findings from the enterprise survey conducted in Ghana by the World Bank in 2013.

The WBES covered business owners and top managers of 720 firms located in four regions of Ghana distributed as follows: Accra (358 firms), Tema (158 firms), Takoradi (57 firms) and Tamale (147 firms). Out of the 720 firms covered in the survey, small firms constitute 472 (65.56%) firms; medium-sized enterprises are made up of 189 (26.25%) firms; and large firms numbered 59 (8.19%) firms. The distribution of firms by size and sector of economic activity is shown in Table 2.

Table 2: Distribution of Firms by Size and Sector of Activity

Size of Firm	Sector of Activity			Number of Firms
	Manufacturing	Retail	Services	
Small (5 - 19)	253 (67.11%)	90 (78.26%)	129 (56.58%)	472 (65.56%)
Medium (20 - 99)	88 (23.34%)	23 (20.00%)	78 (34.21%)	189 (26.26%)
Large (100+)	36 (9.55%)	2 (1.74%)	21 (9.21%)	59 (8.19%)
Total	377	115	228	720

Source: Author's Construct Based on WBES (2013)

4.6 Descriptive Statistics of Dependent Variables

The two dependent variables in this study are demand and access to credit. In order to determine the demand for credit, firms were asked whether they have applied for a loan or a line of credit in the last fiscal year (2012). Out of a total of 720 firms, 167 of them (approximately 23%) applied for credit whilst 553 of them (approximately 77%) did not apply for credit.

Table 3: Descriptive Statistics of Dependent Variables

Dependent Variables	Definition	Number of firms	Percentage (%)
Demand For Credit	1= Apply for credit	167	23.19
	0= Did not apply for credit	553	76.81
Access to credit	1= Application approved	143	85.63
	0= Application not approved	24	14.37

Source: Author's Construct Based on WBES (2013)

Out of the 167 firms that applied for credit, 143 firms (approximately 86%) had access to credit whilst 24 firms (approximately 14%) did not have access to finance. Furthermore, with regards to firm size, 98 small firms and 53 medium-sized firms, represent approximately 58.68% and 31.74% of the firms respectively that applied for credit. Out of 143 firms that had access to credit small and medium-sized firms constitute 52% and 36% respectively. On the other hand, 16 large firms applied for credit and all of these firms had access to credit. These findings are consistent with previous studies (Aryeetey et al., 1994; Kumah, 2011) which indicate that, SMEs tend to be more financially constrained than large enterprises.

Table 4: Demand for and Access to credit by Firm size

Size of Firm	Demand for Credit	Access to Credit
Small (5 - 19)	98 (58.68%)	75 (52.45%)
Medium (20 - 99)	53 (31.74%)	52 (36.36%)
Large (100+)	16 (9.58%)	16 (11.19%)
Total	167	143

Source: Author's Construct Based on WBES (2013)

The survey results also show that less than a quarter of all firms (23.19%) applied for credit whilst majority of them did not apply for credit because of various reasons. Firms were asked to indicate one major reason for not applying for credit. The survey results also show that most of the firms did not apply for credit because they had no need for loan. In addition, features of the loan such as complex application process, unfavourable interest rates, high collateral requirement and short loan maturity period were also major obstacles preventing firms from applying for credit. Particularly, interest rate and collateral security are the two most important factors that hinder firms from participating in the credit market. The main reasons given by firms for not applying for credit are indicated in Table 5.

Table 5: Main Reason for Not Applying for Credit

Reason For Not Applying	Number of firms	Percentage
No need for a loan	154	28.73
Interest rates were not favourable	145	27.05
Collateral requirements were too high	87	16.23
Application procedures were complex	84	15.67
Size of loan and maturity were insufficient	8	1.49
Did not think it would be approved	8	1.31
Other reasons	43	8.02
Don't know	7	1.49
Total	536	100

Source: Author's Construct Based on WBES (2013)

Sources of Credit

With regard to firm's access to credit, firms were asked to indicate the outcome of a recent loan or line of credit they have applied. This definition of access to credit is consistent with the study by Kumah (2011). This is because firms that have their applications approved are not financially

constrained. The survey results also show that private commercial banks are the greatest source of credit among all firms in Ghana. Out of a valid response of 153 firms, approximately 76% of firms were financed from private banks. This is followed by Non- Bank Financial Institutions (NBFIs) and government sources and lastly through other informal sources such as family, friends and money lenders and susu operators respectively. These findings are consistent with that of Osei-Assibey (2014), in whose study majority of financially included rural enterprises obtained finance from formal finance sources.

Table 6: Sources of Credit

Sources	Number of Firms	Percentage
Private Commercial banks	117	76.47
State-owned banks and government agency	12	7.84
Non-Bank Financial Institutions (NBFIs)	21	13.73
Other informal sources	3	1.96
Total	153	100

Source: Author's Construct Based on WBES (2013)

Incidence of Collateral Requirement

The survey shows that approximately 75% of 153 firms report that collateral security was demanded from them by the financial institutions, as part of requirement for the most recent loan or line of credit. Most of the collateral securities requested are in the form of fixed and immovable assets such as land and buildings (81 firms) and machinery and equipment (36 firms), account receivables (28 firms), personal assets (43 firms) and other assets (8 firms). This result is consistent with that of Aryeetey et al. (1994) where land and personal guarantor is requested from 70% and 12% of firms respectively. Tables 7 and 8 show the incidence of collateral security and the assets required respectively.

Table 7: Request for Collateral Security

Request for Collateral	Number of Firms	Percentage (%)
Yes	114	74.51
No	39	25.49
Total Number of Firms	153	100

Source: Author's Construct Based on WBES (2013)

Table 8: Assets Required as Collateral

Asset	1=Yes	0=No	Total
Land and Buildings	81 (71.05%)	33 (28.95%)	114
Machinery and Equipment	36 (31.58%)	78 (68.42%)	114
Account receivables	28 (24.56%)	86 (75.44%)	114
Personal assets	43 (37.72%)	71 (62.28%)	114
Others	8 (7.02%)	106 (92.98%)	114

Source: Author's Construct Based on WBES (2013)

Furthermore, firms were asked to indicate the most significant obstacle to their growth and expansion. Lack of access to credit was a major constraint facing all firms. Overall, 334 firms (approximately 46%) identify access to finance as the biggest obstacle to their growth and expansion. This finding confirms the results obtained by empirical studies in Ghana where access to finance was the most severe constraint facing firms [(Aryeetey et al., 1994); (Baah-Nuakoh, 2003); (Osei-Assibey, 2014)]

Table 9: Biggest Obstacle Affecting the Operations of the Establishment

Obstacles	Number of Firms	Percentage
Access to finance	334	46.39
Electricity	142	19.72
Access to land	46	6.39
Customs and trade regulations	43	5.97
Tax rates	35	4.86
Corruption	27	3.75
Practices of competitors in the informal sector	21	2.92
Political instability	10	1.39
Tax administration	10	1.39
Transport	10	1.39
Inadequately educated workforce	6	0.83
Labor regulations	5	0.69
Crime, theft and disorder	5	0.69
Business licensing and permits	4	0.56
Courts	4	0.56
Don't Know	3	0.42
Non Response	15	2.08
Total	720	100

Source: Author's Construct Based on WBES (2013)

4.6.1 Descriptive Statistics of Explanatory Variables

The descriptive statistics of the explanatory variables used in this study is shown in Table 9. The survey results show that 107 and 613 firms are owned by females and males respectively. Moreover, there is higher incidence of application for credit among female-owned firms than male-owned firms. Also, female owners had greater access to credit than male owners.

High performing firms, measured in terms of positive sales growth applied for and received credit more than firms which are not experiencing increase in sales revenue. In terms of formality status, a higher proportion of formal firms applied and received credit more than unregistered firms. This may be attributed to the fact that financial institutions may be able to assess the risk of default by examining documents presented by registered firms. This suggests that unregistered firms tend to be more credit constrained whilst registered ones are self-select in seeking out credit.

In the same way, application for credit as well as access to credit is higher among firms that possess bank account. This can be attributed to established relationship that these firms have with financial institutions. Financial institutions can assess their bank statements and therefore determine their ability to repay loans.

Moreover, firms with audited financial statements showed higher demand for credit and also had access to credit more than firms without audited financial statements. This finding is consistent with that of Krasniqi (2010) who attributes this to the transparency of those firms. This is because information about firms with audited financial statements is accessible by examining their balance sheet.

Furthermore, firms situated in Takoradi and Tamale applied and received credit more than firms located in Accra and Tema. This may be due to financial institutions focusing on increasing their market share outside Accra and Tema. This implies that firms located in the capital and industrial cities are more credit constrained.

Table 10: Descriptive Statistics of Explanatory Variables

Variables	Description	No. of firms (N=720)	Firms that applied for credit		Firms that have access to credit	
			Number	Percent	Number	Percent
Owner's Gender	1= Female	107	25	23.36	22	20.56
	0 = Male	613	142	23.16	121	19.74
Industry sector	1 = Manufacturing	377	93	24.67	78	20.69
	0 = Non-manufacturing.	343	74	21.57	65	18.95
Firm Performance	1= sales growth	477	114	23.89	98	20.55
	0=No sales growth	243	53	22.63	45	18.52
Registration	1= formal	535	128	23.93	109	20.37
	1=informal	185	39	21.08	34	18.39
Firm Innovation	1= Yes	452	127	28.10	111	24.56
	0= No	268	40	14.93	32	11.94
Bank Account	1=Yes	684	162	23.68	140	20.47
	0= No	36	5	13.89	3	8.33

Table 10 (cont'd)

Variables	Description	No. of firms (N=720)	Firms that applied for credit		Firms that have access to credit	
			Number	Percent	Number	Percent
Location	1= Accra/Tema	501	98	19.56	86	17.17
	0=Takoradi/ Tamale	219	69	31.51	57	26.03
Asset structure	1=land fully owned	256	75	29.30	64	25.00
	0=Land Not fully owned	464	92	19.83	79	17.03
Audited Financial statement	1= Yes	415	120	28.92	104	25.06
	0= No	305	47	15.41	39	12.79

4.6.2 Heckman Probit Estimation of Determinants of Access to Credit

This section discusses the results obtained from the heckman probit regression with sample selection for access to credit. Access to credit is the dependent variable of the outcome model of interest, whilst demand for credit is the dependent variable of the selection model. In order to find the magnitude of the effects of the determinants on firm's access to credit, the marginal effect of these factors was calculated after the heckman probit selection regression.

The Wald test for the overall model with the probability value of chi square statistic [(P> chi2= 0.0001] implies that access to credit and demand for credit are explained by the independent

variables used in this study. The correlation coefficient between the error terms of the two models which is represented by $\rho = 0.0064$. This indicates that the unobservable factors that influence demand for credit are positively related to the unobservable factors that influence access to credit. However, a correlation coefficient close to zero suggests that the process of self-selection is random (Cuddeback et al., 2004). This implies that the model is not affected by selection bias.

The likelihood ratio test of independence between demand and access to credit also indicates that the probability value of the correlation coefficient is not statistically significant [$P > \chi^2 = 0.1901$]. Therefore, we fail to reject the null hypothesis that there is no correlation between the two equations. This finding contradicts a study by Krasniqi (2010), which shows that there is a high degree of self-selection among small firms in the credit market. Since the model is not affected by selection bias, the standard probit estimation of access to credit and demand for credit is carried out. This produces consistent estimators (Heckman, 1979). In addition, a multinomial logit regression of access to credit is also carried out. The results obtained from the heckman probit selection and multinomial logit estimations are shown Tables 12 and 13 in the appendix.

Table 11: Standard Probit Estimation of Access to Credit

Variables	Access to Credit		Demand for Credit	
	Marginal Effect	P>Z	Marginal Effect	P>Z
Owner's Gender: Female	0.0312	0.485	0.0099	0.829
Owner's Experience (years)	0.0024	0.119	0.0024	0.156
Firm Size	0.066	0.279	0.0008	0.989
Firm Age (year)	0.0078	0.249	0.0034	0.609
Sector: Manufacturing	0.0027	0.928	0.0168	0.601
Performance: Sales growth	0.0046	0.876	0.0101	0.753
Firm Registration	0.067*	0.089	0.0553	0.173
Innovation	0.096***	0.001	0.0881***	0.006
Bank Account	0.113**	0.019	0.0848	0.178
Asset structure: Own land	0.044	0.165	0.063**	0.065
Audited Fin. Statements	0.108***	0.000	0.111***	0.001
Location	-0.0896**	0.013	-0.1052***	0.006
Future expansion plans	-	-	0.1003***	0.002
Export status	-	-	-0.0723	0.448
Diagnostics:	Number of obs = 720 LR chi2(12) = 53.45 Prob> chi2 = 0.0000 Pseudo R2 = 0.0745 Log likelihood = -332.17		Number of obs= 720 LR chi2(14) = 64.38 Prob> chi2 = 0.0000 Pseudo R2 = 0.0825 Log likelihood = -357.77	

Note: ***, **, * significant at 1%, 5% and 10% respectively

Source: Author's Construct Based on WBES (2013)

Determinants of Access to Credit

The results obtained from the heckman probit selection show that access to credit is significantly influenced by firm innovation, possession of bank account and having audited financial statements. In addition to these factors, findings obtained from both the probit and multinomial logit regressions indicate that access to credit is influenced by firm registration and location.

Firstly, access to credit is significantly related to firm's innovation. The positive coefficient implies that firms that have introduced new products and services or improved method of production or delivery of services are more likely to have better access to credit than firms that are not innovative. The marginal effect calculated after the standard probit and heckman probit estimation shows that innovative firms have approximately 10 percentage points and 17 percentage points higher access to credit compared to enterprises that are not innovative. These results are also supported by findings from multinomial logit estimation of access to credit. This is because innovative firms that adopt new techniques tend to be more productive and profitable due to the lower cost of production; hence, there is a higher probability of repaying the amount of loan borrowed. This finding contradicts the results found by Freel (2007), where innovative firms have less access to credit than less innovative ones because of the bias towards innovative firms.

Secondly, there is a positive and statistically significant relationship between firms having audited financial statements and access to credit. The results obtained from the marginal effects calculated after the standard probit and heckman probit estimation shows that enterprises with audited financial statements have approximately 11 percentage points and 34 percentage points

higher access to credit compared to firms without audited financial records. This is because these firms are transparent; hence, information about their financial performance can be obtained for purposes of loan evaluation. The reason for this is that lending institutions have access to peruse the financial statements of borrowing firms to boost their confidence in providing credit to those firms. This finding, however, contradicts the study by Kumah (2011) which finds that keeping accounting records does not significantly influence firms' access to credit because not all financial institutions give priority to financial records.

Thirdly, having savings or current bank account significantly influences firm's access to credit. The marginal effects calculated from the standard probit and heckman probit selection show that firms that possess bank accounts have approximately 11 percentage points and 39 percentage points higher access to credit than those without bank account. This finding is in line with a study by Osei-Assibey (2014). This is because banks account gives financial institutions insight about the credit history of firm owners in their loan evaluation process.

Furthermore, there is a positive and significant relationship between firm's registration and access to credit. This means that registered firms are more successful in their access to credit as compared to informal and unregistered firms. The marginal effect calculated after the probit and multinomial logit estimations shows that registered enterprises have approximately 7 percentage points and 6 percentage points higher probability of having access to credit compared informal enterprises respectively. This finding confirms a study by Kimuyu and Omiti (2000) who finds that formal businesses receive more credit than informal ones. This is because registered firms

present certificates of incorporation when seeking credit. Financial institutions have idea of where to locate the firm in case of loan default.

Lastly, both the probit and multinomial logit estimations show that firm's location significantly increase firms' access to credit. The results show that firms located in Accra and Tema have approximately 9 percentage points lower access to credit than firms located in Takoradi and Tamale. In case of Takoradi, the reason may be attributed to springing up of financial institutions after the discovery of oil in the western region.

Contrary to expectations, the characteristics of the owner or manager of the firm, such as gender and years of business experience do not significantly influence firms' access to credit. Moreover, there is no significant relationship between firm size, age, industry sector, performance, and ownership of land as a collateral, on the one hand, and access to credit among SMEs in Ghana. This is probably because more emphasis is placed by financial institutions on other movable assets like machinery and account receivables. Also, firm age, performance, industry sector are not statistically significant determinants of access to credit among SMEs in Ghana.

Determinants of Demand for Credit

The results obtained from the both probit regressions and multinomial logit estimations show that demand for credit is also significantly determined by firm innovation, location, ownership of land, possession of audited financial statements. Moreover, firm's future expansion plans also influence their demand for credit.

Moreover, innovation also significantly increases firms' demand for credit. The results obtained from all the estimations show that firms that are innovative in introducing new products or services or method of production have 9 percentage points higher probability of applying for credit than less innovative firms. This can be attributed to the huge capital requirements of the firms that adopt new techniques of production.

Furthermore, firms having audited financial statements show significant higher demand for credit compared to firms that do not have their financial records audited by external auditors. The results obtained from the multinomial logit estimation show that firms with audited financial statements have 12 percentage points higher in demanding for credit than firms without audited financial records. This is because firms with audited financial statements can present those records to financial institutions when applying for credit.

Moreover, firm's ownership of land, which is used as a proxy for asset structure, significantly increases their demand for credit. The results obtained from the Heckman probit selection and the usual probit estimations indicate that firms that fully own their land show approximately 11 percentage points higher demand for credit than firms that do not own the land on which they operate. This can be attributed to the fact that those firms can provide land as collateral security in applying for credit.

Furthermore, results from both probit and multinomial logit estimations show that location of a firm also significantly influences the firm's demand for credit. The results obtained from all the estimations show that firms located in Accra and Tema have approximately 10 percentage points lower demand for credit compared to firms located in Takoradi and Tamale. This finding

contradicts that of Krasniqi who finds that there is no significant difference in demand for credit between firms located in urban and rural areas. This can be attributed to a major increase in economic activity in a location, such as the oil discovery in the western region of Ghana that has attracted many new firms. Competition among those firms may encourage them to have higher demand for credit so as to expand their operations.

Lastly, firm's future expansion plans also increases their demand for credit significantly. This result obtained from the probit and multinomial logit estimations indicate that firms that have future expansion have approximately 10 percentage points higher demand for credit than firms without future expansion plans. This finding is consistent with that of Krasniqi (2010). The reason may be that future expectation of increases in profit and sales encourages firms that have invested in fixed assets to demand for credit.

4.7 Conclusion

The results derived from this study show that access to credit is still most severe constraint reported by firms in Ghana, especially SMEs. Many small firms do not apply for credit because of feature of loan such as complex application procedures, unfavourable interest rate and collateral requirements and short loan maturity period.

The determinants of access to finance among firms in Ghana were estimated using the heckman probit selection method. It is found that there is not enough evidence to support the hypothesis that there is selection bias regarding firm's access to credit. This implies that firm's selection

process into credit demand is random and that, there is little evidence of self-selection among firm's participation in the credit market in Ghana.

The results obtained show that access to credit is significantly influenced by firm innovation, possession of bank account and having audited financial statements. In addition to these factors, findings obtained from both probit and multinomial logit regressions indicate that access to credit is also influenced by firm registration and location.

On the other hand, demand for credit is significantly influenced by firm innovation, location, ownership of land and possession of audited financial statements as well as firm's future expansion plans.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter presents the summary and conclusion of this study. Recommendations based on the findings of this study are also provided. These recommendations would be of significance to owners of SMEs, financial institutions, government policy makers and other stakeholders who are committed to overcoming SMEs financing obstacles. The limitations of this study are provided at the end of the chapter.

5.1 Summary of Study Findings

The motivation for this study is the persistent lack of access to credit facing all firms in general and SMEs in particular. The study examined factors that determine access to finance as well challenges facing SMEs in their access to finance in Ghana. The specific objective is to find the factors that influence SMEs' demand for credit in Ghana as well as the factors that determine their success of having access to credit from financial institutions. The study focused on characteristics of the owners/managers of SMEs and features of those SMEs that influence their demand and access to credit in Ghana.

The study used a firm-level survey of 720 firms conducted by the World Bank in Ghana in 2013. The study employed heckman probit regression with sample selection model. This is because the

firms may be self-selected in their decision to apply for credit. Therefore, usual estimations based on a sample of only firm that have applied for credit can lead to sample selection bias as the selected sample is not based on a random process.

The study finds that the demand for credit is significantly influenced by firm characteristics. Firstly, firms that are innovative in introducing new products or services or adopting new methods of production are more inclined to seek out credit due to the huge capital requirement in adapting to the new conditions.

Secondly, firm registration also significantly increases the demand for credit among SMEs. Registered enterprises are found to be more likely to participate in the credit market as compared to unregistered firms.

Thirdly, firms that have full ownership of land are more likely to show higher demand for credit than those that do not fully own the land on which they operate.

Moreover, firm's location significantly affects their demand for credit; firms located in Takoradi showed significantly higher demand for credit than firms situated in Accra.

Also, firms with audited financial records have significantly higher demand for credit than firms that do not have audited financial statements due to the transparency of these firms.

Lastly, it is found that firms that have future expansion plans have significantly higher demand for credit than those that do not have future expansion plans.

The study also finds that access to credit is influenced by specific characteristics of the firm such as firm innovation, firm registration, location, possession of bank account and having audited financial statements.

Innovation in firms significantly influences access to credit as innovative firms are found to have higher probability of accessing credit than less innovative firms. Registered firms also have higher access to credit than unregistered firms. This reinforces the importance of formality status in access credit in Ghana. Moreover, firms located in Takoradi and Tamale are found to have higher access to credit than firms located in Accra and Tema. Furthermore, firms that have either savings or current bank account have higher access to credit than those without bank account. Last but not least, firms which have audited financial record have easier access to credit. This is due to the transparency of their operations and the accessibility to information about the financial performance.

On the contrary, firm's size, age, industry sector and performance as measured by sales growth do not bear any significant relationship with either demand or access to credit. Moreover, none of the entrepreneurs' characteristics such as gender and owner's years of business experience is a significant determinant of demand and access to credit in Ghana.

5.2 Conclusions of the Study

Several conclusions can be drawn both from findings from firms demand and access to credit which are the specific objectives of this study.

Firstly, the study finds evidence to support the case that all Ghanaian firms in general, and SMEs in particular, face credit constraints as only less than a quarter (19.86%) of firms have access to credit. Therefore, access to credit still remains a major obstacle to firm's growth and productivity. Firms rank access to finance as the biggest obstacle of the business environment.

Secondly, financial challenges among firms in Ghana include complex loan application process, unfavourable interest rate and collateral requirement, small loan size and short loan maturity period.

Moreover, it can be deduced that there is little evidence of self-selection among firms in Ghana regarding their decision of seeking for external funding or their participation in the credit market. Approximately 28% of firms indicated that they did not need a loan.

Also, the study finds that access to credit is influenced mostly by specific characteristics of the firm such firm innovation, registration, location, possession of bank account and having audited financial statements. However, owner's gender and experience as well as firm size and ownership of land, which can be used as collateral, do not have significant influence on firms' access to credit.

Finally, the study concludes that demand for credit is influenced by a mixture of firm characteristics. Specifically, firm's innovation, location, ownership of land, having audited financial statements and future expansion plans significantly affect the participation of SMEs in the credit market.

5.3 Recommendations

To solve the problem of access to credit, both demand- and supply-side barriers need to be identified and tackled through regulatory reforms and policy initiatives. Based on the findings of this study, the following steps are recommended.

Firstly, providing training to owner and managers of SMEs in such areas as preparation of financial accounts would not only promote their demand for credit but also increase their access to credit. SMEs must have their financial accounts examined by independent external auditors.

Moreover, SMEs should be encouraged to register their businesses and become formal. In this regard, the processes as well as costs involved in registering and licensing of firms need to be checked in order to remove obstacles. This would help build confidence in lending institutions when providing credit to SMEs as they know the owners of the firm and their ownership rights.

Owners of SMEs should be encouraged to adopt new technologies and innovations as this increases their chances of having access to credit. This requires building the capacity and development of SMEs so that they can easily adapt to new technologies and innovations.

The successful implementation of these recommendations however requires effective mechanism for co-ordination between government's efforts and that of the private sector including financial institutions and other stakeholders who are contributing towards providing finance to SMEs. An enabling regulatory framework is essential to sustain and significantly improve access to credit in Ghana.

5.4 Limitations of the Study

One of the major limitations of this study is that the data used does not include many characteristics of the owner/ manager such as educational level and affiliation to business association which are also important factors that are considered in loan evaluation process.

Secondly, the data is a cross sectional data which does not allow for comparison of the problems relating to small firms credit constraints over different periods of time. In this regard, there is the need for future studies to consider time series data in order to make well –informed conclusions on the subject of lack of access to credit among SMEs.

Moreover, the study includes only firms in the urban centres and cities such as Accra, Tema, Takoradi and Tamale. Rural enterprises are not covered by the survey. However, studies of these rural enterprises would help make comparison with the urban firms. Despite these limitations, the findings of this study will be useful in providing insight for further studies.

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APPENDIX

Table 12: Heckman Probit Estimation of Access to Credit

Variables	Access to Credit		Demand for Credit	
	Marginal Effect	P>Z	Marginal Effect	P>Z
Owner's Gender: Female	0.0025	0.850	0.0113	0.808
Owner's Experience (years)	0.00238	0.561	0.0026	0.125
Firm Size	0.0337	0.107	0.0013	0.982
Firm Age (year)	0.0011	0.559	0.0033	0.634
Sector: Manufacturing	0.0096	0.305	0.0161	0.616
Performance: Sales growth	0.0032	0.682	0.0098	0.759
Firm Registration	0.0071	0.545	0.0524	0.197
Innovation	0.1715***	0.007	0.0894 ***	0.005
Bank Account	0.3948*	0.066	0.0834	0.192
Asset structure: Own land	0.0059	0.502	0.0637**	0.062
Audited Fin. Statements	0.3412**	0.023	0.1105***	0.001
Location :	-0.0214	0.220	-0.1084***	0.005
Future expansion plans	-	-	0.0973***	0.004
Export status	-	-	-0.0976	0.244

Diagnostics: rho = 0.0064

Number of obs. = 720;

Censored obs. = 553;

Uncensored obs = 167

Wald chi2(12) = 18.76;

Prob > chi2 = 0.0001 ;

Log likelihood = -428.16

LR test of indep. eqns. (rho = 0): chi2(1) = 1.72;

Prob > chi2 = 0.1901

Note: ***, **, * significant at 1%, 5% and 10% respectively

Source: Author's Construct Based on WBES (2013).

Table 13: Multinomial Logit Estimation of Access to Credit

Variables	Access to Credit		Demand for Credit	
	Marginal Effect	P>Z	Marginal Effect	P>Z
Owner's Gender: Female	0.0304	0.458	0.0112	0.798
Owner's Experience (years)	0.0023	0.126	0.0025	0.121
Firm Size	0.0583	0.235	0.0013	0.982
Firm Age (year)	0.0093	0.233	0.0038	0.571
Sector: Manufacturing	0.0034	0.908	0.0177	0.571
Performance: Sales growth	0.0050	0.864	0.009	0.768
Firm Registration	0.0617*	0.070	0.0481	0.185
Innovation	0.103***	0.002	0.0914***	0.007
Bank Account	0.1424	0.123	0.0842	0.315
Asset structure: Own land	0.0392	0.187	0.0559*	0.073
Audited Fin. Statements	0.1135***	0.001	0.1168***	0.001
Location :	-0.0867***	0.006	-0.1008***	0.002
Future expansion plans	-	-	0.0998***	0.002
Export status	-	-	-0.0726	0.531

Table 13 (cont'd)

Diagnostics:

Number of obs = 720

LR chi2(12) = 53.97

Prob> chi2 = 0.0000

Pseudo R2 = 0.0752

Log likelihood = -331.91

Note: ***, **, * significant at 1%, 5% and 10% respectively**Source:** Author's Construct Based on WBES (2013)