

THE DETERMINANTS OF ACCESS TO FINANCE BY SMALL AND MEDIUM ENTERPRISES (SMEs) IN THE WESTERN AREA OF SIERRA LEONE

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Abstract- To investigate the determinants of SME access to finance, measured as access to bank credit for expansion of business, a survey of 450 registered SMEs randomly selected from the list of registered SMEs in the Western Area of Sierra Leone was conducted for the years 2018, 2019 and 2020. A quantitative approach, through estimation of a probability model for the access to finance determinants was used. A panel data framework was used to investigate the determinants of access to bank credit for the periods 2018, 2019 and 2020, which are the most recent three years' period prior to the survey. Also investigated was whether this access was stronger during the Covid-19 Pandemic period (2020) or the 2018 and 2019 periods, which are pre-pandemic periods

The results show that the year of the COVID-19 (2020) in the study data shows to have the same chance of getting a bank loan as the pre COVID-19 years (2018 and 2019), in spite of the business uncertainty and the downturn associated with such a pandemic. In this regard, a robust mechanism for a strong SME support outside the bank is imperative. This requires strong government and donor support, driven by coordination among the Ministry of Trade, Central Bank, Ministry of Finance, SMEDA and donor partners. The process may require strong FinTech application in a peer-to-peer framework to achieve its goal efficiently.

Keywords: Access, Finance, Small and Medium Enterprises, **JEL Classification:** F14, F18, G14, G21,

1.0 INTRODUCTION

SMEs around the world play pivotal role in national economies, generating employment and value added and contributing to innovation. They are central to achieving environmental sustainability and inclusive growth. Although their contributions vary widely across firms and across countries and sectors, better access to global markets and knowledge networks can strengthen their contributions. However, trade and investment barriers undermine their participation, couple with poor physical and ICT infrastructure which prevent them from operating efficiently and accessing international markets at competitive costs. Digitization offers new opportunities for SMEs to participate in the global economy, but SMEs are lagging behind in the digital transition and disruptive effects need to be considered (OECD, 2017). Shumpeter (1934) emphasizes the role of entrepreneur, as a prime cause of economic development through innovation. Thus, if the entrepreneur has an important role for development, this is achieved through the Firm. There are several sources of finance that SMEs can access although these are not without challenges.

It is well acknowledged that small and medium sized enterprises (SMEs) play great role in sustainable growth process and job creation. However, they are challenged with a number of problems, including access to finance, which keep revolving across studies on the search for their problems. The problem is acute in developing countries. Thus, a search for how their access to finance can be improved is imperative as it can sustain economic growth and job creation.

In Sierra Leone, there has been increasing financial integration with respect to foreign Direct Investment (FDI) in the banking system since the early 2000s. Today, there are a little below 14 banks and 17 community banks. However, there is still problem accessing or serving the SME sector with finance for development. This situation is really an endogenous outcome as the suppliers of loan, which are the banks, fear default and have to work on maximizing their corporate profits. This stems from the fact that financing SMEs is risky and the transaction cost of doing that is high and therefore not strongly compatible with profit maximization.

Poverty is still a challenge in Sierra Leone, as in most sub-Saharan African countries. As Most SMEs around the world, especially the developing countries, started out of the need to have a private sector and self-approach to poverty reduction, through enhancing incomes, they are often constrained by access to finance to start business or expand businesses. In Sierra Leone like in most developing countries, financial sector is dominated by banks and the system is less developed with limited financial instruments. Bank credit remains the most important source of funding enterprises and SMEs dominate the enterprise structure. But most of the credits go to large enterprises but not the SMEs. While there are opportunities that SMEs can signal to the banks, the fear of falling is high risk, which can raise defaults and hence non-performing loans, make banks to be reluctant to lend to a number of SMEs. This has encouraged the emergence of microcredit schemes from various jurisdictions to support both SMEs and households. However, SMEs remain largely unregistered and difficult to grow and poverty remains a challenge to policy makers.

SMEs dominate the private sector of the Sierra Leone economy, but almost all of them are starved of funds Mambula (2002). The persistent lack of finance, for establishment and operation of SMEs caused by the inability of banks to give out credit facilities to

them, warranted the establishment of development finance institutions, such as microfinance institutions, and the introduction of numerous funding programmes for the development of SMEs in Sierra Leone Mambula (2002). Despite the establishment of these institutions and funding programmes, there continues to be persistent cry against inadequate finance for the development of the sector.

Some of the support institutions and opportunities created by the government of Sierra Leone to enable SMEs access funding include: Credit guarantee Fund, established in 1974, Sierra Leone Investment and Export promotion Agency in 2007, Pilot SME job creation scheme and Sierra Leone business forum.

The objective of the chapter is therefore to investigate the determinants of SME access to finance, measured as access to bank credit for expansion of business. The importance of such a study lies in the fact that it can provide government and other stakeholders with key issues to address in the Sierra Leone context when educating SMEs on how to access finance. In addition, it can guide government efforts and non-governmental organizations trusted with the promotion of SME development for job creation and sustainable growth in Sierra Leone. In addition, there a number of studies on the determinants of access to finance in other developing countries, including Gamage (2013) for Sri Lanka, Chowdhury and Alam (2017) for Bangladesh, McKenzie and Woodruff (2008) for Mexico and for Egypt and El-Sahid et al. (2013). However, in Sierra Leone, we are not aware of any published study on the issue. In addition, while descriptive statistics and frequency tabulation dominates the literature, some authors have used a quantitative framework with the determination of what determines the probability of getting bank loan. But previous studies focused on only one period study and could not determine whether probability of loan granting is different during a global crisis like the COVID-19 pandemic. It is therefore imperative to carry out a study that account for these issues, for example, by gathering data for 2018, 2019 and 2020 while noting that 2020 is the COVID-19 pandemic period.

2.0 LITERATURE REVIEW

2.1 Empirical Literature

The literature on SME emphasizes that there is a rapid growth in the number of small and medium-sized enterprises (SMEs) worldwide; however, this category of business is beleaguered by several issues that hinder their growth. A key challenge for most SMEs is the problem of financing. According to Da Silva et al (2007), all small firms live under tight liquidity constraints, therefore making finance a major dilemma for them. Generating an entrepreneurial idea is one thing but accessing the necessary finance to translate such ideas into reality is another. Many novel entrepreneurial ideas have been known to die simply because their originators could not fund them, and banks could not be convinced that they were worth investing in. Finance, whether owned or borrowed, is needed to expand so as to maximize profit and given the nature of SMEs, there is a need for financing. As described by the South African Reserve Bank (2004), SMEs generally have four key funding requirements: initial infrastructure investments, lumpy operations costs, “next-step” expansions, and unexpected opportunities requiring quick access to funds. In this regard, there is a plethora of empirical studies on the factors that determine SMEs access to finance for expansion.

Harelimana (2017) found from a survey of firms that in Rwanda, the factor influencing access to external finance was simple application procedures for loan with 84%. Also, the results confirmed the role of access to finance such as improved profitability (91%), improved firm efficiency (87%), prevent liquidity problems (72%), improved firm solvency (69%) and increase of assets quality (64%). Other role of access to finance by SMEs is to meet expenditures which accounted for 39 percent of the responses. Built on current literatures and research on SMEs, especially with regard to their ability to access finance, the study captures the information relating to problems identified by SMEs in having access to finance and suggesting the ways and means needed for strengthening the SMEs access to finance for their expansion and growth.

Based on a survey of 487 SMEs in Hanoi in June 2015 Nguyen et al found in Vietnam that SMEs account for up to 98% of the total number of enterprises, contributing about 48% to the country’s GDP, 20% to export value and provide jobs for 77% of the country’s labor force. However, majority of the SMEs are micro enterprises with very limited access to resources such as advanced technology and formal credit, etc. Despite their significant contributions to social and economic development. The results show that owner characteristics, educational level and gender are the most important factors in determining the access to credit, followed by SMEs relationship with banks and customers. With regards to the loan interest rate, the owner characteristics variables are non-significant. The most expensive source of financing is from private money lender, followed by commercial bank loan and microfinance. SMEs are often regarded as “the missing middle” they are usually not the subject of interest for commercial banks while their loans might be too large to borrow from microfinance institutions.

Gamage (2013) work on Sri Lanka focused on what determines access to bank finance in small and medium-sized enterprises and found location of the firm, availability of audited financial statements and the owner-manager’s perception of access to finance are critical to access to finance. Harrison and McMillan (2003) and Beck et al., (2006) found that listed firms and foreign-owned firms faced lesser financial constraints from their SME survey. Moreover, Storey (1994) found that corporate status at start-up appears to be associated with a greater likelihood of bank lending: ‘...from the bank’s point of view, a limited company status can offer benefits if it reflects the ‘seriousness’ of the business activity and also means that the owner’s personal collateral can be lodged with the bank in the event of failure (Storey, 1994). Chowdhury and Alam (2017) found out from firms in Bangladesh that size and age of firms, education and skills of the owners and unfavorable credit terms such as high interest rates, lack of collateral security, corruption by bank officials etc. are some of the biggest hurdles that SMEs face in getting loans from financial institutions. Thus, access to finance involves two viewpoints based on demand-side and supply-side factors that determine access to external finance. The first viewpoint attributes the cause of financial constraints primarily to supply-side factors. The main tenet of this perspective is that information asymmetries and opaqueness of SMEs compromise financial institutions supply of funding. Even when funds are available, the same factors are bound to increase transaction costs making it too expensive, and consequently unprofitable, for SMEs to access. As regards the demand-side factors, the preferences and knowledge gaps on the viable sources of finance available are the primary factors that account for inadequate finance for SMEs. Njue et al (2017) in

analyzing the demand side factors highlighted that collateral requirement, lack of credit worthiness information, lack of insufficient net value of assets, liability and entrepreneurial characteristics were the barriers that inhibit SME's from accessing external finance. They note that in accessing financial products and services geographical location of firm and infrastructure play key role. Zhao and Jones-Evans (2016) in the United Kingdom studied 11 economic regions and concluded that regional specific factors such as distance among bank headquarter and branches play key role and increasing the constraining effect. Also, Ghimire and Abo (2013) in Cote D'Ivoire found that in the case of SME's information asymmetry and insufficient collateral are the biggest obstacles. As regards the supply-side factors, Thornsten (2007) opined that these factors are beyond the control of owners and could only be alleviated by policy makers, government policies and public support. Park et al., (2017) advised that the difference between the demand for funds and the supply of funds by SMES, also known as the financing gap, occurs because of the following reasons: (i) the peculiar characteristics of the SMEs, (ii) their market imperfections on the supply side and (iii) combination of reasons originating from both the supply and demand sides. The supply side comprise of the providers of finance (financial institutions and investors), while the demand side refers to the SMEs who require financing from financial institutions and other providers of finance. According to Park *et al.* (2008), the financing gap for SMEs is most prominent in capital market financing. Most countries, including the developed ones, have problems in SME financing through capital markets.

McKenzie and Woodruff (2008) in Mexico used controlled experiments as an alternative

method to identify the impact of access to credit on firm. They designed a field experiment in Mexico that administered treatments of cash or equipment to randomly selected microenterprises in their sample, hence generating shocks to capital stock that are uncorrelated with entrepreneurial ability or growth opportunities. Their results suggest returns to capital of 20–33 percent a month, which are much higher than market interest rates and even higher than returns from a similar experiment in Sri Lanka (de Mel, McKenzie, and Woodruff 2008). Furthermore, interacting the treatment effect with different measures of financial constraints and access to finance, they find that the return is much higher (70–79 percent per month) for firms that report themselves as financially constrained.

Watson and Wilson (2002) in UK using UK data, find that the pattern of coefficients in their study is consistent with pecking order model predictions that retained earnings are the most preferred source of finance, then debt and finally the issue of new shares to outsiders. Cassar and Holmes (2003) in Australia, using a large Australian nationwide panel survey, suggest that asset structure, profitability and growth are important determinants of capital structure and financing. Their results generally support static trade-off and pecking order arguments. However, Frank and Goyal (2003) in America, using data for publicly traded American firms for 1971 to 1998, suggest that their results are contrary to the pecking order theory, in that net equity issues track the financing deficit more closely than do net debt issues. In a study by Vos et al. (2007), using UK and US data, they find that SME financial behaviour demonstrates substantial financial contentment, or 'happiness', mainly due to the fact that most SMEs in the UK do not seek high growth while US SMEs do not have problems in accessing working capital. Their analysis also finds that financial performance indicators (such as growth, return on assets and profit margin) are not determinants of SME financing activities. They also find that younger and less educated SME owners more actively seek external financing, while older and more educated SME owners are less likely to seek external funding. Growth oriented SMEs are more active in the use of and access to external sources of funds in comparison to low growth firms. In addition, they find that social networks (connections) are important to accessing finance. These findings are consistent with the view that in developed economies the issue of access to finance is a less pressing than for SMEs operating in emerging or developing economies. Beck et al. (2008) found that small firms and firms in countries with poor institutions use less external finance, especially bank finance, leasing or trade finance compared with larger firms. They also find that larger firms more easily expand their external financing when they are financially constrained than do small firms, and find suggestive evidence supporting the pecking order hypothesis across countries. Nofsinger and Wang (2011) studied the determinants of external financing in initial firm start-ups in 27 countries. They suggest that information asymmetry and moral hazard problems complicate access to start-up capital. They find that entrepreneurial experience is helpful in obtaining financing from institutional investors, and that the legal environment is important for access to external financing. The amount and diversity of sources of external financing are associated with high levels of property rights, contract enforcement, and corruption protection. Le and Nguyen (2009) in Asia emphasize the role of networking on bank finance for SMEs in Vietnam. Firth et al. (2009) in China use firm profitability, political connections via state minority ownership as criterion in granting loans and in determining loan size in China. They found that in the absence of credit bureaux and exchange of loan information across the banking sector, banks rely on corporate governance as a signal of borrowers' quality in a lending environment with severe asymmetric information. Good corporate governance can serve as organizational collateral to facilitate access to bank loans.

Fowowe (2017) using data for 10,888 firms across 30 African countries conducted an empirical investigation of the effects of access to finance on the growth of firms and made

use of a new rich enterprise-level data set from the World Bank's Enterprise Surveys employing both subjective and objective measures of access to finance. The subjective measure of access to finance is obtained from the ranking of access to finance as no obstacle or severe obstacle to business operations. The objective measure of access to finance is a variable which measures whether firms are constrained in obtaining credit or not. The results using the subjective measure show that the access to finance constraint exerts a significant negative effect on firm growth. Also, the results using the objective measure show that firms that are not credit constrained experience faster growth than firms which are credit constrained.

According to Beck et al (2008) access to finance favorably affects firm performance along a number of channels. Using cross-country efforts to collect consistent firm-level survey data have allowed researchers to explore the mechanisms through which finance affects economic growth and the structure of the economy. Beck, Demirgüç-Kunt, and Maksimovic (2005) and Beck et al (2006) found out that using these firm-level surveys has shown that improvements in the functioning of the formal financial sector reduce financing constraints more for small firms. Klapper, Laeven and Rajan (2006) also found out that access to finance

promotes more start-ups and that smaller firms are often the most dynamic and innovative. Better access to the financial system also enables incumbent firms to reach a larger equilibrium size by enabling them to exploit growth and investment opportunities (Beck, Demirgüç-Kunt, and Maksimovic 2006). Furthermore, Claessens and Laeven (2004) found out that greater financial inclusion allows the choice of more efficient asset portfolios and innovation whilst Demirgüç-Kunt, Love, and Maksimovic (2006) found out that financial deepening can also increase incentives for firms to incorporate, thus reaping benefits from the resulting opportunities of risk diversification and limited liability.

Banks are institutions that help SMEs around the world in financial issues but small businesses are still unable to take full advantage of banks. Small businesses are constrained due to institutional factors and weaknesses in financial system of developing countries. Thus, the barriers to external finance are information asymmetry, insufficient collateral, complexity in loan application process and less experience in the industry.

Previous studies on determinants of access to finance by SMEs focused on descriptive statistics and frequency distributions to determine the factors that ranks top on SME access to finance, while some have estimated quantitative models of SME determinants, and are able to determine whether the differences in the constraints are significant, their focus has been on a one period survey. This study diverges from previous study in two folds:

- i. A quantitative approach, through estimation of a probability model for the access to finance determinants was applied. Also, a panel data framework was used to investigate the determinants of access to bank credit for the periods 2018, 2019 and 2020, which are the most recent three-year period prior to the survey.
- ii. It was also investigated whether this access was stronger during the Covid-19 Pandemic period (2020) compared to 2018 and 2019 periods, which are pre-pandemic periods. This is important because the pandemic period has been described as a period of depression as great as the one in the 1930s that affected all economies including SMEs around the world.

3.0 METHODOLOGY

3.1 Model Specification to investigate the Determinants of SME Access to Finance in the Western Area of Sierra Leone

In order to investigate the factors that determine access to finance by SMEs in Western Area of Sierra Leone, we define access to finance as access to a successful application for credit in order to expand the business. The model is specified as follows:

$$(\text{Bank_Loan_Dummy})_{it} = \beta_0 + \beta_1 \text{Ln}(\text{Net Earnings})_{it} + \beta_2 \text{Ln}(\text{Capital})_{it} + \beta_3 \text{Ln}(\text{Labour})_{it} + \beta_4 \text{Ln}(\text{Leverage})_{it} + \beta_5 \text{Ln}(\text{Liquidity})_{it} + \beta_6 \text{Experience}_{it} + \beta_7 \text{Location}_{it} + \gamma' X_{it} + U_{it} \quad (3.1)$$

Where:

i and t are firm and time subscript for firm i and time t

Bank_Loan_Dummy is a dummy variable taking the value of 1 for a firm that gets a bank loan in a given year and 0 for a firm that does not get any bank loan in a given year.

Net Earnings is Net Annual Business Earnings of the firm, which is taken as sales or total revenue minus expenditure.

Capital is the capital of the SME this is taken as the value of the tangible assets of the SME

Labour is the number of employees of the SME.

Leverage is the leverage of the SME, which is total debt of the SME divided by total asset.

Liquidity is short term liquidity of the SME, which is the current ratio or current asset divided by current liabilities.

Experience is the experience of the SME, which is taken as the age in months of the existence of the SME

Location is a dummy variable that takes the value of 1 for a firm located in the urban part of Western Area Sierra Leone and 0 for those located in rural Western Area of Sierra Leone.

X is a vector of firm specific dummy variables covering ownership structure and sector of operation of the firm. Ownership structure categories covered are sole proprietorship, partnership, and private limited liability. Separate dummies for sole proprietorship, partnership and private limited liability with sole proprietorship as the reference category. For the sectors of operation of the SMEs, the following sectors are used: trade, real estate, education, construction, medical and research. There was a provision for other and trade was used as the reference sector. A dummy was created for each sector without inclusion of the trade dummy in the model so it can be the reference category.

γ' is a row vector of coefficients of the dummy variables for ownership type and sector of operations

U is the disturbance term that has a firm specific and the traditional disturbance term component that changes over time and firm.

It is expected that when net earnings increases, the probability of getting a bank loan increases when firms have higher net earnings, larger capital, more experience on the business and more short-term liquidity and more labour while smaller firms face greater restrictions on credit. While labour and capital are strong indicators of how big a firm is, reflecting its stability, larger net earnings is an indication of strong ability to pay if shocks are not expected. Moreover, higher short-term liquidity is an indication of the illiquidity nature of the firm at least in the short run. Also, firms with higher experience are expected to have more innovation in order to be able to withstand business shocks and operate to pay banks.

Firms with more debt may be the ones that cannot succeed in paying banks and hence the ones with lower probability to repay further loans given to them, a negative effect of leverage on the probability of getting a bank loan. However, they may be the ones that can push hard to get bank loans, especially where these loans are not recorded in their accounts and if some are really informal. Where the loan application and approval process have some internal processes and pictures that are difficult to snap, the

ones with more debts may have higher probability to get loans, especially where covert commissions may apply. In this regard, leverage may have positive effect on the probability of getting bank loan.

3.2 Estimation Procedure

The model estimated, equation (3.1), has a dependent variable that is a dummy variable, taking the value of 1 for a firm that is successful in getting a bank loan in a particular year and 0 for an unsuccessful loan application. In this regard, the probit model is useful in order to predict the probabilities of firms having a bank loan, given the independent variables. The year 2018, 2019 and 2020 are the years considered for the survey. Hence, the survey data produces a panel data of firms surveyed on information on 2018, 2019 and 2020. To the extent that the data set is a panel data, the individual and time dimension deserves special treatment in order to account for firm heterogeneity. In this regard, a panel probit model is estimated. However, in dealing with panel data estimation, the fixed effect or the random effect model can be estimated. While the fixed effect is a within estimator in the sense that it explains why a firm grows by assuming that the unobserved heterogeneity among firms is fixed over time, it wipes out the factors that are fixed over time but are included in the model (that is, those that are invariant to time). These factors include; location, gender and sector of operation of a firm. The random effect however estimates the coefficients of the time invariant factors while considering that the unobserved heterogeneity factors that are not included in the model are random. Hence, the random effect probit model was applied in order to have coefficients of the time invariant factors such as location of the SMEs, the ownership dummies and sector dummies. It is worth nothing however that in estimating the panel probit model, while a number of dummies may be included, the convergence property can be such that for estimation to be concluded some dummies are not estimated and are dropped in the estimation process.

The coefficients of the panel probit model give the change in probability of an SME getting a bank loan when a continuous variable (example, net earnings) increases by one unit or 1 % (when it is in log). For the dummies, a coefficient gives the difference between the probability of getting a bank loan when a firm is in one category and the probability of getting the loan when it is not in that category.

3.3 Data Issue

A structured survey questionnaire was designed and administered to the selected SMEs. The information collected included among others: main sector of operations/services provided, ownership structure of the SME, the years of experience of the SME, the number of persons employed, the profit or loss of the SME, the gender of the SME head, the level of education of the SME head and the tangible assets of the SME. The questionnaire is shown in Appendix 1.

(i) Sample Design

A survey was conducted and analysis was done based on the survey data. The survey design is discuss here. The sampling of SMEs was done such that ownership structure and main structure of operation of SMEs were considered, in addition to geographical location (urban or rural) of firm in the Western Area of Sierra Leone. A list of all SMEs was obtained from the register of the formal SMEs (that is, registered SMEs) from SMEDA¹ which was used as the sample frame. Simple random sampling technique was applied to have the representative of the population, with the idea of capturing differences in location of firms and sector of operation of the firms. However, given the low activity of registered SMEs in Agriculture and Mining, these were not considered in the survey.

(ii) Sample Size Determination

There are 538 registered SMEs in the Western Area, based on the sampling frame. The sample size was determined using the following formula (3.2), which is the formula for sample size determination estimating population proportion.

$$\text{Sample size} = \frac{z^2 \times p(1-p)}{e^2} \div \left(1 + \left(\frac{z^2 \times p(1-p)}{e^2 N} \right) \right) \tag{3.2}$$

Where N= Population Size, p is population proportion, which is taken as 0.5 for an unknown population proportion, e = margin of error and z = z-score.

Table 1 shows the various sample sizes with different marginal errors and confidence levels.

Table 1: Sample Size Determination

Population	Confidence Interval	Margin of Error	Sample
538	95	2percent	440
538	95	3percent	358
538	95	5percent	225
538	99	2percent	477
538	99	3percent	417
538	99	5percent	298

Source: Researchers' calculation, 2021

¹ Small and Medium Enterprises Development Agency.

A confidence interval of 95 and a margin of error of 2percent which gives a sample of 440 because of the low margin of error and the high confidence interval and given the other candidates for sample size, the time and resource can allow for this, though it is the highest. However, 450 samples were selected to ensure that at least 440 respondents participated. A random sample was used by assigning numbers to the 538 SMEs in the population and placed in a bowl, stirred properly to ensure that each of the numbers has an equal chance of being selected. The numbers were then drawn one at a time (without replacement) and placed into a separate box until all the 450 were selected which became the sample for the study.

The SMEs were divided into zones and the following zones were established within the Western Area: Goderich, Lumley, Aberdeen, Aberdeen Road, Congo Cross, Murray town, Brookfield, Freetown Central, Kissy Road, Regent, Uppgun, Kissy, Wellington and Calaba Town, Hastings, Rokel and Waterloo. Table 2 shows the distribution of the questionnaire to SMEs.

From the number of SMEs in each stratum, pro rata was used to determine the number of SMEs from each stratum to be assigned in the sample. A random sample was used to determine the SMEs from each stratum by assigning numbers to each of the SMEs in the chosen stratum. These numbers were then placed in a bowl, stirred properly to ensure that each of the numbers has an equal chance of being selected. The numbers were then drawn one at a time (without replacement) and placed into a separate box until the total number of SMEs required for each stratum were selected which became the SMEs to be administered questionnaire for each stratum in the sample.

Table 2: SMEs Population, Sample Size and Distribution of Questionnaire in the Western Area of Sierra Leone

No.	Area	Number of SMEs	Cumulative Total	Number of Questionnaire Administered	Cumulative Total
1	Goderich	13	13	11	11
2	Lumley	19	32	16	27
3	Aberdeen	13	45	11	38
4	Aberdeen Road	26	71	22	60
5	Congo Cross	19	90	16	76
6	Murray Town	13	103	11	87
7	Brookfield	32	135	27	114
8	Freetown Central	120	255	100	214
9	Kissy Road	51	306	43	257
10	Regent	23	329	19	276
11	Uppgun	32	361	27	303
12	Kissy	34	395	28	331
13	Wellington	19	414	16	347
14	Calaba Town	13	427	11	358
15	Hastings	39	466	32	390
16	Rokel	13	479	11	401
17	Waterloo	59	538	49	450
TOTAL		538		450	

Source: Researchers' compilation, 2021

4.0 RESULTS

4.1 Results of the Estimated Probit Models

In order to investigate the determinants of access to finance, access to finance is defined in terms of access to borrowing facility from commercial banks in order to expand the SME business. In this regard, a limited dependent variable model where the dependent variable is a dummy variable was estimated. The dependent variable takes a value of one when an SME has a loan facility and zero when the SME does not have a loan facility. The Probit model was estimated for the specified model as the linear probability model is not appropriate given that it can predict negative probabilities and it is characterised by heteroscedasticity. The predicted values from this model give the probability of getting loan from a bank given the values of the independent variables

The data was collected from the surveyed firms for the period 2018, 2019 and 2020. The independent variables were the natural log of net earnings, SME capital, labour, leverage, liquidity and experience. Firm specific characteristics in the form of dummy variables were also included. These firm specific characteristics are location (whether urban or rural), firm structure and sector of operation of the firm.

Both a static version and the dynamic model of access to finance model were estimated. Table 3 shows the results of the static version of the Access to Finance Model. Model (3) of the table is the preferred model because in this model, the firms are considered heterogeneous, in which case a Panel Probit Model was estimated using the random effects model. The random effects model was used because firm specific characteristics are in the model and their effects need to be estimated, which cannot be done by the fixed effects model. In addition, in Model (3), the robust standard errors are used in order to solve potential heteroscedasticity problem. Model (1) and Model (2) are presented in the table only for comparison purpose.

Table 3: The Static Model of Access to Finance Determinants

VARIABLES	(1)	(2)	(3)
	Pooled Probit	Random Effect Probit	Random Effect Probit (Robust SE)
Ln(Net Earnings)	0.124*** (0.0459)	0.212*** (0.0696)	0.212** (0.0933)
Ln(capital)	-0.0185 (0.0504)	-0.0437 (0.0721)	-0.0437 (0.102)
Ln(Labour)	0.106* (0.0598)	0.207** (0.0819)	0.207 (0.142)
Experience	0.00204*** (0.000623)	0.00516*** (0.000851)	0.00516*** (0.00192)
Ln(leverage)	0.179*** (0.0445)	0.314*** (0.0603)	0.314*** (0.104)
Ln(liquidity)	0.116** (0.0477)	0.150** (0.0646)	0.150 (0.0989)
dummy_urban	0.0895 (0.0972)	0.168 (0.133)	0.168 (0.291)
dummy_Private_limited	-0.0176 (0.167)	-0.0856 (0.227)	-0.0856 (0.461)
dummy_Partnership	-0.0132 (0.103)	0.0869 (0.142)	0.0869 (0.301)
dummy_education	-0.307 (0.446)	-0.479 (0.616)	-0.479 (1.361)
dummy_transport	-0.369 (0.240)	-0.793** (0.331)	-0.793 (0.779)
dummy_medical	-0.0328 (0.204)	0.237 (0.274)	0.237 (0.586)
dummy_others	0.925** (0.409)	1.946*** (0.564)	1.946 (1.276)
2019.year	0.0217 (0.100)	0.0651 (0.135)	0.0651 (0.0598)
2020.year	0.0723 (0.102)	0.106 (0.137)	0.106 (0.0784)
Constant	-2.478*** (0.772)	-4.344*** (1.075)	-4.344*** (1.899)
Observations	1,051	1,051	1,051
Number of id		372	372
LR Chi2	71.41		
Wald chi2(19)		135	44.82
Prob>chi2	0.000	0.000	0.000
Log Likelihood	-630.934	-218.6	-218.6
Sigma_u		1.123	1.129
Rho		0.560	0.560
LR Test of Rho chi (1)		824.65	824.65
P-Value for Rho LR Test		0.001	0.001

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: Researchers 'compilation, 2021

The static model of access to finance determinant shows that the factors that determine access to finance by SMEs in the Western Area of Sierra Leone are (i) net earnings of the firm, (ii) experience of the firm, which was measured by the age of the firm in months and (iii) leverage of the firm, which was measured by the debt of the firm relative to its total assets. It thus indicates that in the Western Area of Sierra Leone, firm specific characteristics such as location of the SME (urban or rural), the structure of the firm (sole proprietorship, partnership or private limited company) and sector of operation do not determine the probability of getting loans from banks for their expansion.

The time dummies for 2019 and 2020 have positive coefficients but they are not significant, this implies that 2019 and 2020 have the same probabilities with 2018 of an average SME getting loan from a commercial bank.

As the dynamic model captures the delayed effect (lagged effect) as well as the contemporaneous (same period) effect, the preferred model is the dynamic model. The dynamic model was therefore estimated.

Table 4 shows the dynamic model of access to finance determinants. As in the static model, the Pooled Probit (Model 1) and Random Effect Model without standard error adjustment (Model (2)) have been presented together with the preferred model (Model (3)) for comparison only. Model (3) which captures the panel nature of the data and also adjusts the standard errors of the coefficient is the preferred model.

Table 4: The Dynamic Model of Access to Finance Determinants

VARIABLES	(1)		(2)		(3)		
	Probit Model	Pooled	Probit Effect Model	Random Model	Probit Robust SE Model	Random Effect	Effect Model
Ln (Net Earnings)	-0.0104 (0.0928)		0.0400 (0.115)		0.0400 (0.122)		
Ln(Net Earnings) Lag1	0.201** (0.0997)		0.367*** (0.123)		0.367*** (0.121)		
Ln(capital)	-0.228* (0.136)		-0.423** (0.181)		-0.423** (0.191)		
Ln(capital) Lag 1	0.121 (0.124)		0.161 (0.168)		0.161 (0.142)		
Ln(Labour)	0.177 (0.141)		0.320* (0.174)		0.320* (0.167)		
Ln(Labour) Lag 1	-0.0366 (0.143)		0.00472 (0.176)		0.00472 (0.169)		
Experience	0.00171** (0.000777)		0.00436*** (0.000953)		0.00436** (0.00186)		
Ln(leverage)	0.0632 (0.0905)		0.145 (0.108)		0.145 (0.105)		
Ln(leverage) Lag1	0.144 (0.0925)		0.236** (0.110)		0.236** (0.110)		
Ln(liquidity)	0.0426 (0.0833)		0.217** (0.0978)		0.217** (0.103)		
Ln(liquidity) Lag1	0.126 (0.0860)		0.134 (0.103)		0.134 (0.107)		
dummy_urban	0.00252 (0.127)		0.0173 (0.154)		0.0173 (0.313)		
dummy_Private_limited	-0.0565 (0.212)		-0.220 (0.257)		-0.220 (0.474)		
dummy_Partnership	-0.0482 (0.130)		-0.0593 (0.160)		-0.0593 (0.303)		
dummy_education	-0.293 (0.552)		-0.536 (0.684)		-0.536 (1.249)		
dummy_transport	-0.390 (0.297)		-0.725** (0.349)		-0.725 (0.747)		
dummy_medical	-0.145 (0.262)		-0.239 (0.324)		-0.239 (0.605)		
dummy_others	1.039** (0.518)		2.319*** (0.640)		2.319* (1.249)		
2020.year	0.0168 (0.103)		0.0305 (0.126)		0.0305 (0.0415)		
Constant	-1.985* (1.021)		-3.980*** (1.246)		-3.980* (2.228)		
Observations	680		680		680		
Number of id			356		356		
LR chi 2	55.95						
Wald chi2(19)			134.3		40		
Prob>chi2	0.000		0.000		0.003		
Log Likelihood	-407.794		-116.176		-116.176		
Sigma_u			0.972		0.972		
Rho			0.486		0.486		
LR Test of Rho chi(1)			583		583		
P-value for Rho LR Test			0.001		0.001		

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: Researchers' compilation, 2021

The dynamic model of access to finance by SMEs in Western Area of Sierra Leone shows that the determinants of access to finance are net earnings of the firm, experience, leverage, liquidity and capital. However, while net earnings, experience, leverage and liquidity affect firms' access to finance positively, the capital of firms affects their chances of getting loans negatively. In addition, both net earnings of firms and firm leverage affect their access to finance with one-year lag while liquidity and capital affect firms' access to finance in a contemporaneous sense (in the same year).

The result shows that when net earnings of firms increase in a given year by 1 percent, the probability of getting loan in the following year increase by 0.40. However, in the same year, there is no significant effect on the probability of getting bank loan for expansion. In the case of leverage, which measures the effect of debt on firms' chances of getting bank loan, when debt relative to assets (leverage) increases in a given year by 1 percent, the chances of getting loan in the following year increases by 0.24 but in the same year, there is no significant effect. This result implies that firms that increase their net earnings have higher chances of getting bank loan than those whose debt increase. The fact that leverage increases probability of getting loan could be due to the fact that firms with higher debts are likely to be the more distressed ones, thus they tend to put more efforts and search for bank loans to support their businesses. The fact that net earnings have a higher impact could be due to the fact that banks, which are the supplier of the loans, tend to put more emphasis on firms that are doing well and thus tend to give more premium to those firms that are doing well on their businesses.

The liquidity of firms, in this case the short-term liquidity, has positive contemporaneous effect on the probability of firms getting loans. The coefficient shows that when short term liquidity increases by 1 percent, the probability of getting bank loan increases by 0.21. This also implies that firms with short term liquidity do not put much effort in searching for bank loans in comparison with those that are in debts. Experience is found to have positive effect on the probability of getting loans-every additional month of experience increases the chance of getting loan by 0.004. Hence experience is found to have the list impact on the chances of getting loans, though it has a positive effect on access to finance. The capital of firms is found to have negative effect on the chances of getting loan. Specifically, when the capital of a firm increases by 1 percent in a given year, the chances of getting loan decrease by 0.42. This implies that the variable with the highest effect on access to finance is SME capital and this effect is negative, suggesting that banks consider higher SME capital as a factor that increases probability of default.

The result further show that labour, location, firm structure and sector of operation do not determine access to finance by SME. In addition, the year dummy was found to be insignificant. This implies that 2020 and 2019 were not different in terms of the probability of an average firm getting bank loan in the Western Area of Sierra Leone.

5.0 Conclusion

Small and Medium Enterprises (SMEs) are important in the development of every economy. However, in sub-Saharan Africa, they have challenges including access to finance for business expansion. In Sierra Leone, as in a number of developing countries, the financial systems are small and shallow. In addition, cost of credit is often high due to infrastructure cost and macroeconomic performance, including high inflation rates. Moreover, due to limited outreach only a small percentage of the total population normally have access to credit for business expansion. Thus, many SMEs rely on self-financing or colleagues and friends for capital.

While cost of administering small loans to SMEs reduces profits of the creditors and weak laws to enforce payment by financial defaulters are binding constraints on the supply side, there are firm specific factors that affect access to finance SMEs.

The objective of the study was to investigate the determinants of access to finance in the Western Area of Sierra Leone. Access to finance was measured as success of a bank loan for the expansion of the SME business as all SMEs considered were the registered ones and they all had bank accounts with a commercial bank.

Data on firm level net earnings, capital, labour, leverage, short term liquidity, experience in months of existence, as measured by age, firm specific factors such as location, ownership structure, and sector of operation was obtained through a survey of registered firms in Western Area of Sierra Leone. Data on whether a firm had a successful credit application or not was also collected, through a dummy variable taking one for a successful loan application and zero for an unsuccessful loan application. A time dummy variable was explicitly included in the model to determine how 2018, 2019 and 2020 were different in terms of chances of an SME to get a bank loan. A Probit model was estimated as it determined the probability of getting a successful loan application given the values of the explanatory variables.

A number of results were obtained. These were: (i) the determinants of access to finance are net earnings of the firm, experience, leverage, liquidity and capital. While net earnings, firm leverage (debt-assets ratio), short term liquidity and experience have positive effects on the probability of a successful loan application by an SME, capital has a negative effect on it; (ii) Net earnings and leverage affect the probability of a successful loan application with a year lag while capital and liquidity affect it in the same year; (iii) labour and all firm specific characteristics, which are location, structure of ownership and sector of operation of the SME do not explain access to finance in Western Area of Sierra Leone; (iv) a decrease in capital has the greatest chance of increasing the success of loan application, with a probability of 0.42 for a 1 percent decline in capital. Increase in net earning has the greatest chance of increasing the probability of a successful loan application, with a probability of 0.38 for a 1 percent increase in net earnings. This is followed by leverage and short-term liquidity with probabilities of 0.24 and 0.22 for a 1 percent increase in leverage and liquidity respectively and for every month of increase in experience of the firm, the probability of a successful loan increases by 0.004; and (v) the result also shows that firms had equal probabilities of getting loans from commercial banks in 2018, 2019, and 2020.

5.1 Recommendations

As net earnings, which captures profitability of SMEs, has a significant positive effect on the probability of getting a bank loan by the SMEs, domestic monetary and fiscal policies in the form of interest rate on bank borrowing and taxes levied on SMEs should be designed such that they can highly favour SMEs. An alternative is for SMEs to have special rates on these polies, especially

tax rate. In the case of interest rate loans meant for SMEs, these need to be coordinated by the central bank on a regular basis, especially during downturns. This can raise net earnings by reducing financing cost and thus net earnings increases with its attendant impact on the probability of access to finance for expansion. Continued support and search for mechanisms that can reduce SME operational costs is also imperative in this light.

Another important policy implication of the result is that as experience has positive significant effect on the probability of getting a bank loan by the SMEs, it is useful for the Cooperate Affairs, City Council, SMEDA and the Ministry of Trade in collaboration with the commercial banks to have an SME financing forum where SMEs can be educated on the need to persevere in business operation since as they get more business experience their chances of obtaining bank loans increases.

As leverage is found to have a positive effect on the chances of getting bank loans, which is more likely to be the case when SMEs have unreported informal sector loans and are highly committed to push bank loan applications in spite of other hurdles, it is useful for the domestic financing environment to be systematically built such that successful SMEs do not see it necessary to take the high-cost informal sector loans.

The impact of short-term liquidity on bank lending is positive and significant. In this regard, SMEs require some form of training whereby they can be informed about the positive role savings in their accounts have on their chances of borrowing.

The year of the COVID-19 in the study data shows to have the same chance of getting a bank loan as the pre COVID-19 years (2018 and 2019), in spite of the business uncertainty and the downturn associated with such a pandemic. In this regard, a robust mechanism for a strong SME support outside the bank is imperative. This requires strong government and donor support, driven by coordination among the Ministry of Trade, Central Bank, Ministry of Finance, SMEDA and donor partners. The process may require strong FinTech application in a peer-to-peer framework to achieve its goal efficiently.

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