

# Performance Determinants of Small And Medium Enterprises Smes in the Western Area of Sierra Leone

<sup>1</sup>Dr. Richard E.O Pearce, <sup>2</sup>Abdullah Bah

<sup>1</sup>Department of Banking and Finance, Institute of Public Administration and Management (IPAM), University of Sierra Leone, AJ Momoh Street, PO Box 570, Freetown, Sierra Leone

<sup>2</sup>Department of Banking and Finance, Institute of Public Administration and Management (IPAM), University of Sierra Leone, AJ Momoh Street, PO Box 570, Freetown, Sierra Leone

## Abstract

The determinants of Performance of SMEs in the Western Area of Sierra Leone have not been properly determined. In this study, 450 SMEs were randomly selected from the population of SMEs in the Western Area of Sierra Leone from 2018 to 2020 and estimated in panel data framework. An econometric model is used to investigate these determinants. Hence, both OLS version and random effect model were estimated. In the OLS, the firms are considered homogenous while in the random effect regression, they are heterogeneous. The result shows that capital productivity and labour productivity have positive effects on SME performance and that the performance determinants of SMEs in the Western Area of Sierra Leone are gender of SME heads, the structure and service type of the SMEs and the educational level of the SME heads.

**Keywords:** Performance, Determinants, Small and Medium Enterprises. **JEL Classification:** F14, F18, G14, G21,

## 1.0 INTRODUCTION

SMEs are critical in national economies around the world, generating employment and value added and also contributing to innovation and development. They provide the enabling environment to achieve environmental sustainability and more inclusive performance. Nonetheless these contributions vary widely across firms, sector and countries. However, certain features of the institutional and regulatory framework result in disproportionate burdens on SMEs.

SMEs are key players in any economy and the wider eco-system of firms. Enabling them to adapt and thrive in a more open environment and participate more actively in the digital transformation is essential for boosting economic performance and delivering a more inclusive globalization. Across countries and at all levels of development, SMEs have an important role to play in achieving the Sustainable Development Goals (SDGs), by promoting inclusive and sustainable economic performance, providing employment and decent work for all, promoting sustainable industrialization and fostering innovation, and reducing income inequalities (OECD, 2016).

### 1.1 The Economy of Sierra Leone

On the structure of the economy of Sierra Leone, agriculture remains the dominant sector. About 50 percent of the gross domestic product comes from agriculture. However, a large number of farmers operate on small scale. Hence, SMEs dominate the agricultural sector although most of these SMEs are unregistered. The industrial sector, which comprises manufacturing, mining and quarrying accounts for about 20 percent of GDP and the services sector accounts for about 30 percent of GDP. The largest sector hosting registered SMEs in Sierra Leone is the service sector. SMEs dominate the day-to-day business of the economy of Sierra Leone but most of them are not registered.

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, the 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 instead of SMEs. While there are opportunities that SMEs can signal to the banks, the fear of failing is high risk, which can result in defaults and hence non-performing loans, making banks reluctant to lend to a number of SMEs. Hence 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.

Banks which provide credit facilities on profit making basis, thereby boosting the SME sector are caught in information asymmetry as it is difficult to evaluate and monitor in registered SMEs, most of which may not even have bank accounts. Credit to the private sector (including SMEs) is low in terms of GDP. It averaged 5.7% of GDP during 2011-2017, compared to 47.0% in Sub-Saharan Africa. This implies that access to credit by SMEs is low, in spite of their potential contributions to performance and their large numbers.

This is one of the reasons for poor performance of the economy in terms of impact of bank credit on private investment and hence on performance of most developing countries, including Sierra Leone. Banks and other financial institutions such as microfinance institutions find it difficult to lend to most SMEs because of failure to keep proper financial records (Okurut et al, 2011).

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 and most recently in 2020 the Sierra Leone Economic Diversification Project to help strengthen the business enabling environment by promoting reforms to facilitate business entry and operation, facilitate strategic public investments to improve competitiveness and private investments, support SMEs and entrepreneurs and build the capacity of public institutions and private sector operators. Thus, the World Bank approved \$40 million grant from the international development association to support investment and performance of SMEs in non-mining productive sectors (World Bank, 2020). Also, the government of Sierra Leone approved Le40 billion styled the 'Munafa fund' as soft loan to assist SMEs. Most of the SMEs in Sierra Leone operate in the service sector and since the decade old war ended (1991-2001), the percentage contribution of the service sector to GDP has increased compared to the war period, suggesting SMEs performance and efficiency have improved but whether its efficiency is high is unclear.

Countries all over the world including Sierra Leone are increasingly setting up business development and support institutions to address the management and environmental capability challenges experienced by SMEs. According to Davidson and Henrekson (2002), the broad mandate of these institutions is to promote and facilitate the development of SMEs through provision of financial assistance, incubation, policy advocacy, training and capacity building.

## 1.2 Aim and Objectives

The overall objective of this study is to investigate the factors that influence the performance and development of SMEs in the Western Area of Sierra Leone.

The specific study objectives are to investigate in the Western Area of Sierra Leone, (i) the quantitative impact of the productivity of capital and the productivity of labour on SME performance in the Western Area of Sierra Leone (ii) the firm specific determinants of the performance of SMEs in the Western Area of Sierra Leone. (iii) the impact of demographic characteristics of SME managers on performance.

While there are a number of studies on the determinants of the performance of SMEs and the professional training of SMEs is common among the theoretical determinants, previous studies treat this variable without considering whether the training is recent or not. This distinction is important because while professional training is important, where it has taken place for long it may not be important in creating performance differential among firms, especially where innovation becomes important. In this regard, it is important to take this distinction into consideration in current studies, which is done in this study. Also, the impact of the COVID-19 pandemic on economic performance across countries on the globe is known to be negative, for example, Sierra Leone's economy declined by 2.2 percent in 2020, from a performance of 5.4 percent in 2019 and 3.5 percent in 2018. It is therefore important to distinguish the impact of the performance determinants before and during the pandemic, which can reveal the impact of the pandemic on the SMEs. Previous studies did not take this into account on the basis that they were not done in a global health crisis of this nature, where all economies have suffered the impact negatively at the macro level. The study incorporates this into the investigation of the performance determinants of the SMEs in the Western Area of Sierra Leone.

## 2.0 LITERATURE REVIEW

### 2.1 Empirical Literature

In what follows we focus on studies relating to particular aspects of firm characteristics, firm head demographic characteristics and environmental characteristics. These studies are divided into enterprise characteristics, entrepreneurial characteristics and environmental characteristics.

(a) **Enterprise Characteristics:** these are the peculiar qualities of the business and include: managerial and business experience, business training, access to credit, factor productivity, location of the business, sector of the firm, business experience, degree of leverage, current liquidity and ownership structure.

#### Managerial and Business Experience

Temtime and Pansiri (2004) in Botswana found the level of firm performance to be high among SMEs owned by individuals who have managerial experience or have prior experience as SME owners or managers whereas Hallberg (2000) in the UK found that SMEs owned by inexperienced individuals attracted low business earnings. These firms often find it very hard to survive because of lack of business acumen that comes with experience. Temtime and Pansiri (2004) in Botswana studying 'Small firms' Critical Success/Failure determinants in Botswana' found that human resource development is one factor that limits the success of many small firms in Botswana particularly lack of experienced personnel. However, the study by Kalleberg and Leicht (1991) in the US found no significant relationship between the manager's experience and the performance of the firm among SMEs arguing that firm performance is not an outcome of experience but rather of the entrepreneur's innovative, proactive behavior and sound expansion strategies.

#### Business Training

Business training according to Foreman-Peck et al. (2006) gives the SME owner/manager the wisdom to provide what the market wants and the necessary skills to keep and manage business accounts. This attributes in turn increases the competency and performance rate of the firm. According to Foreman-Peck et al. (2006) it is vital for entrepreneurs to invest in business training programs to enhance their business skills. Temtime and Pansiri (2004) also shared the same sentiments arguing that lack of managerial skills is one of the factors that limit the success and performance of SMEs. The study by Temtime and Pansiri (2004) however revealed that lack of affordable business training facilities worked against the desire by most entrepreneurs to acquire business training. Cosh et al. (2000) in UK studying the relationship between business training and employment performance in

SMEs found a positive link between employment performance and acquisition of business skills by firm owners. Chatterji et al (2003) testing the signaling hypothesis found that firms operated by owners who have undergone some business training programs attract high levels of business earnings and hence grow faster than firms owned by entrepreneurs with no business training. Both Cosh et al. (2000) and Chatterji et al (2003) argued that trained entrepreneurs experience high performance rate because most of them employ modern day business expansion strategies such as online advertisement to promote their products.

### Access to credit

According to Kapunda et al. (2007) in Botswana SMEs investment and performance has been found to be positively influenced by accessibility to business credit. Investigating the relationship between 'SMEs funding, development and trade in Botswana' Kapunda et al. (2007) further found out that government finance schemes such as CEDA have not solved the problem of limited access to credit by SMEs, particularly for female owned small and micro enterprises. This according to the study explains the poor performance of these firms. Bigsten et al. (2000) studying the performance of the manufacturing sector in African countries found that the return to physical capital in the manufacturing sector is low in Africa due to scarcity of credit. CBS, ICEG, and K-Rep (1999) in Kenya also found that the main reason for business closure was lack of business credit. Access to credit is therefore an important variable that explains not only the performance and performance of SMEs but also the survival of these firms.

### Factor productivity

This refers to both Capital and Labour productivity. Salman and Yazdagar (2012) said factor productivity measures the influence of efficiency in the SME's operations on the performance and performance of the firms. Demsetz (1973) found that the level of efficiency is a key factor in distinguishing high performing firms from low performing firms. Jovanovic (1982) studying selection and assessment of firms in different industries found both capital and labour productivity to be positive and statistically significant in influence firm performance and that highly efficient firms in different sectors increase their output and grow in size over time while less efficient firms are pushed out of business in the long run. Wiboonchutikula (2002) in Thailand studying SMEs performance found that SMEs experience high performance levels when the productivity of both capital and labour is greater and more persistent. This is very much in line with the findings of Mateev and Anastasov (2010) in Central and Eastern Europe who also found a positive relationship between factor productivity and SMEs performance.

### Location of the business

Glancey (2008) found that firms in urban areas grow faster than those located in rural areas. The reason advanced is that urban firms have access to a large market of consumers with high purchasing power compared to firms operating in rural areas. Garoma (2012) divided the location of the business into firms operated at home and firms operated outside home and found out that firms operated at home perform better and more likely to grow faster than firms operated outside home because of low operational cost (free rent) enjoyed by home operated firms. However, Mead and Liedholm (1998) reached different conclusion concerning the performance and performance of home operated firms and those operated outside home. They (Mead and Liedholm, 1998) found firms operated in open spaces such as streets markets to be profitable and more likely to expand than firms operated at home because of their exposure to a large market.

### Sector of the Firm

Niskanen and Niskanen (2005) and Garoma (2012) in their studies found out that the sector of the firm has a significant influence on the performance and performance of SMEs. It has also been found that the structure of the sectors differs from country to country hence sectoral performance of SMEs will also differ from country to country. Mead and Liedholm (1998) in Kenya found that SMEs in all sectors in Kenya expanded more rapidly than those in the retail trade sector. However, Garoma (2012) in Ethiopia found the service sector to be the most profitable sector and hence SMEs operating in this sector are more likely to expand faster than those in other sectors. Niskanen and Niskanen (2005) in Finland compared SMEs in the manufacturing sector and those in the non-manufacturing sector and found out that SMEs in the manufacturing sector perform better and experience high performance levels than those in the nonmanufacturing sector.

### Business Experience

The age of the firm is one of the most investigated variables affecting the performance and performance of SMEs (measured by the number of years the firm has been in existence). The variable captures the influence of firm experience on the performance of SMEs. Akoten et al. (2006) and Kira and He (2012) found the relationship between firm experience and the performance of SMEs to be positive. According to them commercial banks usually prefer to give loans to enterprises which have been operating for a longer period of time. The belief is that experience enhance competence in doing business, hence highly experienced firms are more likely to attract high profits and less likely to default loan payment. Woldie et al. (2008) also found that older firms are more likely to grow faster than younger firms because of the social capital (experience) they have gathered over time. Some studies have however found younger firms to perform better and experience faster performance than old firms. This however contradicts the findings Olutunla and Obamunyi (2008) in Nigeria who studied 'factors associated with the profitability of SMEs found the relationship between the age of the firm and business performance to be negative. They found younger SMEs to perform better and grow faster than old enterprises. They attributed this phenomenon to the fact new firms are more innovative and more likely to easily adapt to the current business environment than older firms. This is in line with the findings of Glancey (2008) and Niskanen and Niskanen (2005) who found out those young enterprises have a significantly higher profits and performance rates than the older firms. They argued that accumulation of experience by older firms does not give them a competitive advantage over new firms.

Salman and Yazdanfa (2012) in Sweden found the influence of firm experience on SME performance to be negative but statistically insignificant.

### Degree of Leverage

Leung and Yu (1996), Goddard et al. (2005) and Mateev and Anastasov (2012) identified the degree of leverage as an important factor in explaining SME performance. They however found out that the relationship between SME performance and degree of leverage is negative. Arguing that firms that are highly leveraged often find it hard to meet their debt obligations and in extreme cases resulting in repossession of firm assets by lending institutions thus adversely affecting firm performance. However, Mateev and Anastasov (2010) and Honjo and Haranda (2006) found the relationship between SME performance and leverage to be positive. According to Mateev and Anastasov (2010) this result shows that SMEs in growing economies need increased access to external capital to finance their assets performance but Honjo and Haranda (2006) argued that the positive relationship between SME performance and leverage holds only when the firm's profits exceed the loan cost.

### Current liquidity

Goddard et al. (2005) found current liquidity to be positively and strongly associated with SME performance which is in line with the findings of Nickell and Nicolitsas (1999) who studied the impact of financial pressure on SMEs and found the relationship between liquidity and firm performance to be positive, arguing that firms that are able to maintain high liquidity are not exposed to the risk of failing to meet their financial obligations. They pointed that high liquidity enables the firm to respond quickly to changes in the business environment and this enhance the level of their performance.

However, Deloof (2003) argued that even though current liquidity has a positive effect on firm performance, holding high proportion of liquid assets may constrain the firm from taking advantage of long-term investment opportunities and hence compromise future performance. This line of thought was supported by Mateev and Anastasov (2010) who found the influence of current ratio on firm performance to be negative. According to them, this result reflects that enterprise with better business investment opportunities will opt to maintain low levels of liquidity to finance future performance.

### Ownership Structure

According to Garoma (2012) ownership structure affect SMEs performance and performance through the degree of risk taking. His argument is that sole proprietors are usually risk averse and more often prefers investing in low-risk projects which attract low rates of return. On the other hand, partnership and joint ventures have a great appetite for risky projects which attract high rates of return. SMEs operating as partnerships or joint ventures are therefore more likely to grow faster than those operating as sole proprietorships. This assertion is upheld by Niskanen and Niskanen (2005) who found sole proprietorship to have a negative impact on SME performance, pointing out that the level of risk aversion is high among firms owned by individuals. Wiboonchutikula (2002) and Mateev and Anastasov (2012) assessed the performance rates of public sector and private sector SMEs. Wiboonchutikula (2002) found high SMEs performance rates to be associated with public sector companies. He argued that public sector SMEs have easier access to external funding and hence are more likely to grow at a faster rate than private SMEs. On the other hand, Mateev and Anastasov (2010) found no significant difference in the performance rates between public SMEs and private SMEs, concluding that ownership structure is not an important determinant of SMEs performance.

**(b) Entrepreneurial Characteristics:** This deals with the demography of the head of the enterprise and includes; age of the entrepreneur, educational level of the entrepreneur, marital status of the entrepreneur and the gender of the entrepreneur.

### Age of the Entrepreneur

The age of the entrepreneur has a positive and significant influence on the performance and performance of SMEs although there are divergent views on the actual age group that exerts a positive influence on the performance of these enterprises. According to Storey (1994) SMEs owned or managed by young and middle-aged individuals perform better than those managed by older entrepreneurs. The argument advanced is that young and middle-aged managers have the energy, motivation and commitment necessary to run any enterprise to higher levels. These entrepreneurs (young and middle aged) are also usually not risk averse and hence they are more likely to invest in projects which bring forth high rates of return. This is buttressed by Chilya (2012) in South Africa who found out that 'Profitability of Small Grocery Shops in South Africa' managed by young and middle-aged individuals experience faster performance than those managed by older entrepreneurs. This phenomenon, according to Chilya (2012) is explained by the highly innovative minds of young and middle age entrepreneurs who often invest in defensible niche products and services. On the contrary, Akoten et al (2006) and Woldie et al (2008) in their respective studies found firms owned by middle aged and older entrepreneurs to perform better and experience more performance than firms owned by young entrepreneurs. Akoten et al (2006) measured SME performance by firm accessibility to credit and pointed out that lending institutions usually prefers to lend to older entrepreneurs because of their adverse attitude towards risky projects.

### Education Level of the entrepreneur

Carter and Jones-Evans (2000) asserted that basic education equips the entrepreneur with necessary numeric and reading skills to operate a successful business. According to this study there is a positive relationship between business performance and the education qualification held by the business owner or manager. High business performance is common in firms owned by entrepreneurs with high educational qualification. Woldie et al. (2008) in Nigeria found that the educational qualification of the owner has significant and positive effect on their performance and performance of SMEs in Nigeria. They found SMEs owned by entrepreneurs who hold diploma, degree and post graduate qualifications to attract large profits and experience rapid performance than those owned by entrepreneurs whom their highest education level is primary and secondary school. Akoten et al (2006) and



Chiliya (2012) also found a positive relationship between SME performance and the education qualification held by the SME entrepreneur. Garoma (2012) in Addis Ababa studying “factors influencing microenterprise success in the urban informal sector found the influence of educational qualification of the SME owner to be positive but insignificant in influencing the performance and performance of SMEs. He therefore argued that a good educational background of the firm owner is necessary but not sufficient for business performance.

### **Marital Status of the Entrepreneur**

Although the literature available on the influence of the marital status of the SME owner on the performance and performance of the firm is very limited, Akoten et al (2006) in Kenya found out that SMEs owned by married entrepreneurs perform better and experience high performance levels than those owned by unmarried entrepreneurs and have greater access to financial assistance from commercial banks than unmarried entrepreneurs.

### **Entrepreneur’s Gender**

Garoma (2012) and Mead and Liedholm (1998) in their studies found out that male owned businesses tend to perform better than those owned by women reason been that women have limited access to financial assistance as compared to men. Carter and Jones-Evans (2000) attributed this to the fact that women have to split themselves between business and household duties and so this divided attention adversely affect the performance and performance of women owned firms. Studies of Woldie et al., (2008) found the gender of the entrepreneur to have an insignificant influence on the performance and performance of SMEs, arguing that both men and women have equal potential to run successful business.

(c) **Environmental Characteristics:** This deals with the factors that affect the business operations. Subsumed under this heading are; government taxation, environmental characteristics, business registration and institutional factors

### **Government Taxation**

Hagen and Sannarnes (2007) found out that high government taxes discourage entrepreneurship and increases the failure rate of existing firms and deters market entry of new firms. In the UK Employment Department Wren and Storey (2002) reviewed the impact of the 1980 tax cut on the UK economy and found that business investment grew as a result of the tax cut. The implication is that the high pre 1980 tax rates was impeding business investment. Davidsson and Henrekson (2002) in Sweden found business performance to be negatively affected by business taxes especially in sectors where tax rates are relatively high.

### **Business Registration**

Davidsson and Henrekson (2002) in Sweden using the occupational choice model found that bureaucratic business registration procedures impact negatively on domestic entrepreneurship and the economy as a whole as it impedes entry of new firms into the market. This is buttressed by Djankov et al., (2000) who in their study in Italy found out that the desire to start-up firms and early-stage performance of firms to be low in countries where business or company registration is characterized by arduous bureaucratic procedures. They observed that until recent times the process of starting a business in Italy involved more than sixteen procedures at a total cost of US\$4000.00 and a waiting period of sixty-two days for the completion of the business permit and that explains why business entry rate was low in Italy especially among SMEs as compared to countries like Canada where starting a business involves only two procedures at a total cost of US\$280.

### **Institutional factors**

The institutional factors measure the impact of both public and private institutions on the performance and performance of SMEs. According to Davidsson and Henrekson (2002) these are institutions whose mandate is to promote the development of SMEs through business funding, capacity building and business incubation. Davidsson and Henrekson (2002) found that in Australia, private institutions have been found to be highly effective in promoting SMEs development compared to public institutions because until recent times, public institutions were not common in Australia with almost one-half of SMEs sourcing assistance from private accountants, banks and corporate lawyers. Robson et al. (2008) found the take up rate of public institutions support programs to be low among immigrants and minority ethnic groups who often survive on informal business activities. According to Bosma et al (2004) both public and private institutions have a significant and positive impact in the survival and performance of SMEs. Wren and Storey (2002) assessed the impact of British Enterprise Investment Scheme (a public scheme in Britain) on the performance and performance of SMEs and found it to be having a positive and significant impact on the performance and performance of medium-size firms but not on small firms.

While there are a number of studies on the determinants of the performance of SMEs and the professional training of SMEs is common among the theoretical determinants, previous studies treat this variable without considering whether the training is recent or not. This distinction is important because while professional training is important, where it has taken place for long it may not be important in creating performance differential among firms, especially where innovation becomes important. It is therefore important to distinguish the impact of the performance determinants before and during the pandemic, which can reveal the impact of the pandemic on the SMEs. This is because after the pandemic sources of economic recovery will be sought by all nations that were hit negatively. Previous studies did not take this into account on the basis that they were not done in a global health crisis of this nature, where all economies have suffered the impact negatively at the macro level. The study therefore extends the knowledge fronted on SME performance determinants from two fronts, which are:

1. Estimating the effect of capital and labour productivities on firms’ performance and the firm specific and demographic characteristics of SME heads in both a pre-covid 19 and during covid 19 scenarios in the Western Area of Sierra Leone; and

- 2. Estimating the effect of not only overall capacity building but recent capacity building of SMEs heads on SME performance in the Western Area of Sierra Leone.

**3.0 METHODOLOGY**

The World Bank (2011) did a survey of formal SMEs financing and constraints for a number of countries and it has been repeated every three years. This study leveraged on the World Bank (2011) study on SMEs performance. A structured survey questionnaire was designed and administered to the selected SMEs. The information collected included among others: main sector of operation/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.

**3.1 Sample Design**

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 SMEDA<sup>1</sup> 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.

**3.2 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 (3.1), which is the formula for sample size determination estimating population proportion.

$$\text{Sample size} = \frac{\frac{z^2 \times p(1-p)}{e^2}}{1 + \left(\frac{z^2 \times p(1-p)}{e^2 N}\right)} \tag{3.1}$$

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: Researcher’s calculation, 2021

We used 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 of Sierra Leone: Goderich, Lumley, Aberdeen, Aberdeen Road, Congo Cross, Murray town, Brookfield, Freetown Central, Kissy Road, Regent, Ugun, 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.

<sup>1</sup> Small and Medium Enterprises Development Agency.

**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	Uggun	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
<b>TOTAL</b>		<b>538</b>		<b>450</b>	

Source: Researcher's compilation, 2021

### 3.3: Model Specification to Investigate the Determinants of SME Performance in the Western Area of Sierra Leone

We used an econometric model to investigate the determinants of SMEs performance in the Western Area of Sierra Leone. In previous empirical studies, professional training dummy was used to represent the impact of training, without distinguishing the impact of overall training and recent training. This distinction is important as recent training which may introduce various elements of innovation to drive the SME may have stronger impact than older ones. This study diverges from previous empirical studies as follows:

Carefully introducing overall professional training in SME and recent professional training in SME in the econometric model one-by-one to determine the implications for firm performance

We specify a model of SME performance to estimate a firm performance model for the period 2018 to 2020. This requires panel data specification. In this regard, we specify the model as follows:

$$Y_{it} = \alpha + \beta X_{it} + \delta Z_{it} + \zeta_{it} + e_{it} \quad (3.2)$$

Where:

Y= firm size, which is given as the business earnings of the SME

X= vector of enterprise specific characteristics. These include firm capital productivity, firm labour productivity, short term liquidity, the firm's degree of leverage, experience, sector of operation, ownership structure and location of firm (rural or urban).

Z = vector of socio-economic characteristics of the SME head, which includes education level, professional training and gender of the SME head.

$\zeta_{it}$  = the idiosyncratic factor that are not captured in the model but can make firms to have observed differences in size and are specific to firms.

$e_{it}$  = the conventional error term which varies over time and firms.

The specification in equation (3.2) is consistent with panel data specification as we have two periods (T=2) and many firms (N=number of firms in the data set or survey).

i and t in the equation are firm subscript and time subscript respectively

#### 3.3.1 Variable Measurement

The measurement of the variables which are to be included in the model for the estimation of the determinants of SME performance are discussed here. Table 3 presents the model variable measurement.

**Table 3: Model Variables, Measurement and Expected Signs**

Variable	Measurement	Expected Sign
<b>Dependent Variable</b>		
Earnings	Net Annual Business Earnings, taken as sales or total revenue minus expenditure	
<b>Independent Variables</b>		
Capital Productivity	Net Annual Business Earnings divided by tangible assets	Positive

Labour Productivity	Net Annual Business Earnings divided by number of employees	Positive
Experience	Number of Years of Firm Existence	Positive/Negative
Leverage	Total Debt divided by Total Assets	Negative
Liquidity	Current Asset divided by Current Liabilities (which is current ratio, representing short term liquidity)	Positive/ negative
Gender	Gender Dummy with 1 for Female Head and 0 for Male Head., representing gender of head of SME	Positive/Negative
Location	Location Dummy with 1 for Urban and 0 for Rural	Positive
Training	Dummy with 1 for those with professional training in SME and 0 for those who do not have.	Positive
Ownership	Representing ownership structure of the SME. Separate dummies for, sole proprietorship, partnership and private limited but sole proprietorship is used as the reference category	Positive/Negative

**Table 3: Continued: Model Variables, Measurement and Expected Signs**

Variable	Measurement	Expected Sign
Sector	Representing sector of operation of the SME. Separate dummies for different sectors but with trade as the reference category. Sectors used are trade, real estate, education, construction, medical, research and others	Positive/ Negative
Educational Level	Separate Dummies for different levels of education. The levels used are degrees, diploma, secondary, primary and no formal education. The reference category is no level of education.	Positive/Negative

Source: Researcher's compilation, 2021

### 3.4: Estimation Procedure

As the data period is 2018 to 2020 the model is estimated in panel data framework. Both OLS version and random effect model were estimated. In the OLS, the firms are considered homogenous while in the random effect regression, they are heterogeneous. The fixed effect is not investigated here because the model has dummy variables, which do not vary over time across firms and including them in a fixed effect model provides no coefficient for them. Hence, only the pooled model and random effect models were estimated to ensure coefficients of firm specific variables are obtained as they do not vary over time.

This model was initially estimated using OLS, which considers all firms to be homogeneous, and then using the random effect model, where firms' specific characteristics are considered to be random, making firms to be heteroscedastic. The Breusch-Pagan test for random effect versus pooled model (OLS regression) was used to determine whether the random effects model was preferred to the fixed effect model.

## 4.0 RESULTS

### 4.1 Determinants of the Performance of SMEs in the Western Area of Sierra Leone

The empirical model results of the SME performance model are discussed in this section. Panel data model for the period 2018 to 2020 was estimated for the SME performance model. The model is estimated with both firm homogeneity (OLS) and firm heterogeneity (random effect) and introduced a time dummy with the reference year being 2018.

Table 4 shows the model of firm performance for the surveyed firms, using overall training to measure impact of training. Model 1 of Table 4 is the ordinary least squares (OLS) result and Model 2 is the random effects model.

Table 5 shows the model of firm performance for the surveyed firms, using recent training to measure impact of training. Model 1 of Table 5 is the OLS result and Model 2 is the random effects model where overall training dummy was used.

**Table 4: The SME Performance Regression with Overall Training Variable**

VARIABLES	(1) OLS	(2) Random Effects
Ln(Capital_P)	0.127*** (0.0192)	0.229*** (0.0218)
Ln(Labour_P)	0.696*** (0.0183)	0.612*** (0.0215)
Experience	-0.000454 (0.000284)	-0.000194 (0.000428)
Ln(leverage)	0.0135 (0.0203)	-0.0319 (0.0199)
Ln(liquidity)	0.00848	0.0110



	(0.0199)	(0.0192)
dummy_gender	-0.0920**	-0.131**
	(0.0435)	(0.0626)
dummy_urban	-0.103**	-0.0908
	(0.0449)	(0.0631)
dummy_Overall_training	0.113***	0.116*
	(0.0436)	(0.0650)
dummy_Private_limited	0.430***	0.278**
	(0.0765)	(0.114)
dummy_Partnership	0.335***	0.277***
	(0.0483)	(0.0724)
dummy_Real_Estate	-0.265	-0.266
	(0.262)	(0.417)
dummy_education	1.419***	1.492***
	(0.203)	(0.327)
dummy_transport	0.0191	0.0523
	(0.0961)	(0.155)
dummy_construction	0.733***	0.657***
	(0.111)	(0.163)
dummy_medical	-0.0473	0.0644
	(0.0974)	(0.153)
dummy_research	-0.234	-0.277
	(0.207)	(0.335)
dummy_others	0.0978	0.140
	(0.176)	(0.284)
dummy_degree	0.771***	0.821***
	(0.0872)	(0.125)
dummy_diploma	0.195**	0.280**
	(0.0798)	(0.112)
dummy_primary	-0.469***	-0.554***
	(0.105)	(0.159)
dummy_secondary	0.166**	0.202*
	(0.0751)	(0.106)
2019.year	-0.0322	-0.0359
	(0.0437)	(0.0225)
2020.year	-0.0662	-0.0741***
	(0.0446)	(0.0245)
Constant	5.985***	7.142***
	(0.310)	(0.371)
Observations	1,081	1,081
R-squared	0.770	
F-stat	153.8	
Prob>F	0	
Number of id		383
Wald		2806
Prob>chi2		0

Standard errors in parentheses

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

Source: Researcher's compilation, 2021

**Table 5: The SME Performance Regression with Recent Training Variable**

VARIABLES	(1) OLS	(2) Random Effects
Ln(Capital_P)	0.127*** (0.0192)	0.229*** (0.0218)
Ln(Labour_P)	0.698*** (0.0183)	0.612*** (0.0215)

Experience	-0.000392 (0.000282)	-0.000133 (0.000425)
Ln(leverage)	0.00839 (0.0204)	-0.0336* (0.0200)
Ln(liquidity)	0.000306 (0.0200)	0.00773 (0.0192)
dummy_gender	-0.0921** (0.0436)	-0.130** (0.0628)
dummy_urban	-0.0921** (0.0459)	-0.0822 (0.0642)
dummy_recent_training	0.0999** (0.0460)	0.109 (0.0675)
dummy_Private_limited	0.469*** (0.0766)	0.320*** (0.114)
dummy_Partnership	0.335*** (0.0485)	0.272*** (0.0730)
dummy_Real_Estate	-0.284 (0.264)	-0.303 (0.420)
dummy_education	1.414*** (0.204)	1.484*** (0.328)
dummy_transport	0.00657 (0.0963)	0.0382 (0.155)
dummy_construction	0.696*** (0.112)	0.625*** (0.164)
dummy_medical	-0.0302 (0.0969)	0.0791 (0.152)
dummy_research	-0.195 (0.208)	-0.232 (0.336)
dummy_others	0.106 (0.176)	0.152 (0.284)
dummy_degree	0.782*** (0.0869)	0.830*** (0.125)
dummy_diploma	0.195** (0.0800)	0.280** (0.112)
dummy_primary	-0.487*** (0.105)	-0.569*** (0.160)
dummy_secondary	0.161** (0.0751)	0.197* (0.106)
2019.year	-0.0324 (0.0437)	-0.0365 (0.0225)
2020.year	-0.0670 (0.0446)	-0.0754*** (0.0245)
Constant	5.973*** (0.310)	7.141*** (0.371)
Observations	1,081	1,081
R-squared	0.769	
F-stat	153.4	
Prob>F	0	
Number of id		383
Wald		2804
Prob>chi2		0

Standard errors in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

Source: Researcher's compilation, 2021

Tests for poolability (OLS model) versus random effects were conducted for both the overall training model and the recent training model. The test results, which are shown in Table 6, show that in both the overall training and recent training model, the random effect model is preferred to the pooled model. This is on the basis that the p-values for the null hypothesis of pooled model are very

low (relative to 1 percent level) so we reject the null hypothesis. These p-values are 0.001. In this regard, for both the overall training model and the recent training model, the preferred model is the random effects model.

**Table 6: Breusch-Pagan Test Result for Pooled Model versus Random Effects**

		Variance	Chi-Square	P-Value
<b>Overall Training Model</b>	Ln of Dependent Variable	1.49	572.08	0.001
	Rho( $\rho$ )	0.08		
	Mu( $\rho$ )	0.26		
<b>Recent Training Model</b>		Variance	Chi-Square	P-Value
	Ln of Dependent Variable	1.47	574.18	0.001
	Rho( $\rho$ )	0.08		
Mu( $\rho$ )	0.26			

Source: Researcher's compilation, 2021

The estimated model result shows that the elasticity of labour is more than that of capital and both are significant with capital and labour elasticities being 0.23 and 0.61 respectively. This is the case in both the overall training model and the recent training model. Both leverage and liquidity are not significant in the SME performance model at the conventional 1 and 5 percent levels. The result also shows that male headed SMEs perform less than female headed SMEs.

The reference groups used in the model for variables with multiple categories are trade for services/activity type, sole trader for SME structure and no formal education for educational level of SME. All the service type dummies are significant with positive coefficients, with the exception of real estate, transport, medical, research and other service/activity types. This is the case in the estimated models. Three education dummies are significant but while degree and diploma dummies have positive coefficients, primary school has a negative coefficient. Secondary dummy is not significant at the conventional 1percent and 5percent levels. Table 7 shows the joint test results for the significance of all dummies in the overall training model. The table (from the overall training model) shows that while both location and overall professional training do not matter for SME performance, gender, structure, type of service and educational level of the SME head matter for performance of the SME.

**Table 7: Test of Significance of Regression Dummy Variables in the Overall Training Model**

Test for Significance of the Dummies	Test Statistic	P-Value	Conclusion for Firm performance Model
Significance of Gender Dummy	Chi2(1) = 4.34	0.037	Gender matters for SME performance
Significance of Location Dummy	Chi2(1) = 2.07	0.150	SME location (urban or rural) does not matter for SME performance
Significance of overall Professional Training Dummy	Chi2(1) = 3.16	0.075	Overall professional training of SME head does not matter for SME performance
Significance of SME structure dummies	Chi2(2) = 15.69	0.001	Firm structure matters for SME performance
Significance of SME Service Type	Chi2(7) = 37.53	0.001	Type of service provided by SME matters for performance
Significance of Education Dummies	Chi2(4) = 96.77	0.001	Educational differences matter for firm performance

Source: Researcher's compilation, 2021

Table 8 shows the joint test results for the significance of all dummies in the recent training model. The table (from recent training model) shows that as in the overall training model, while both location and overall professional training do not matter for SME performance, gender, structure, type of service and educational level of the SME head matter for performance of the SME.

**Table 8: Test of Significance of Regression Dummy Variables in the Recent Training Model**

Test for Significance of the Dummies	Test Statistic	P-Value	Conclusion for Firm performance Model
Significance of Gender Dummy	Chi2(1) = 4.27	0.039	Gender matters for SME performance
Significance of Location Dummy	Chi2(1) = 1.64	0.200	SME location (urban or rural) does not matter for SME performance
Significance of Recent Professional Training Dummy	Chi2(1) = 2.62	0.106	Recent professional training of SME head does not matter for SME performance

Significance of SME structure dummies	Chi2(2) = 16.35	0.001	Firm structure matters for SME performance
Significance of SME Service Type	Chi2(7) = 334.87	0.001	Type of service provided by SME matters for performance
Significance of Education Dummies	Chi2(4) = 103.26	0.001	Educational differences matter for firm performance

Source: Researcher's compilation, 2021

It is observed that in the preferred models (random effect models) of the overall training model and the recent training model of SME performance, the 2020-year dummy has a negative coefficient and the coefficient is significant at the 1 percent level. The 2019 dummy also has a negative coefficient and is not significant. This implies that SME firms observed lower performance in 2020 than the year 2018, the reference year. In addition, the negative sign and insignificance of the 2019 dummy implies that while firms generally had reduced performance in 2019 compared with 2018, the difference in performance with 2018 was not significant. This suggests that 2020 was a year of low performance of SMEs in Western Area of Sierra Leone relative to 2018 and 2019.

## 5.0 Conclusion

The results show that with respect to the quantitative impact of productivities of capital and labour on SMEs performance, it was found that both capital and labour productivities have positive effects on the performance of the SMEs.

With regard to firm specific determinants of SMEs performance, the results show that location has positive effect on SMEs performance with SMEs in the urban areas performing better than those in the rural areas.

As regards the ownership structure, the study found out that partnership and private limited enterprises perform better than sole proprietorship.

Also, the type of service or sector of operation of SMEs in the Western Area of Sierra Leone matters with SMEs in the education and construction sectors performing better than those in the other sectors.

Moreover, regarding the impact of demographic characteristics of SME managers on the performance of the SMEs, the study found out that the gender of SME heads matters with male headed firms performing better than female headed firms. Also, the educational level of the SME heads matters with SMEs headed by degree holders performing better than their counterparts with diploma, secondary, primary or no education. However, SMEs who have received recent training perform better than those that have not received any recent training.

## REFERENCES

1. Akoten, J.E., Yasuyuki, S., and Keijiro, O. (2006). The Determinants of Credit Access and Its Impacts on Micro and Small Enterprises: The Case of Garment Producers in Kenya. *Economic Development and Cultural Change* (Chicago Journals), Vol. 54, No. 4 (July 2006).
2. Bigsten, A. Collier, P., Dercon, S. Fafchamps, M., Gauthier, B., Gunning, J. W., Oduro, A., Oostendorp, R., Patillo, C., So'nderbom, M., Teal, F., and Zeufack. A. (2003), Credit Constraints in Manufacturing Enterprises in Africa. *Journal of African Economie*, 12. Botswana: Implications for Economic Diversification. *Botswana Journal of Economics*, Vol 8 Issue12 pp58-80.
3. Bosma, N. van Praag, M. Thurik, R. and de Wit, G. (2004). The Value of Human and Social Capital Investments for the Business Performance of Startups. *Small Business Economics* volume 23
4. Carter, S., and Jones-Evans. D. (2000), *Enterprise and Small Business: Principles, Practice and Policy*. Harlow: FT Prentice Hall.
5. CBS, ICEG, and K-Rep. (1999), National Micro and Small Firms report. Kenya.
6. Chatterji, M., Seaman, P. T, and Singell J.R. (2003), A test of the signaling hypothesis. *Oxford Economic Papers*, 55.
7. Chilya, N. (2012), Impact of Level of Education and Experience on Profitability of Small Grocery Shops in South Africa. Vol 3(1).
8. Cosh, A., Hughes, A. and Weeks, M. (2000). The Relationship between Training and Employment Performance in Small and Medium-Sized Enterprises. Working Paper 188. Cambridge University, Centre for Business Research, Cambridge.
9. Davidsson, P. and Henrekson, M. (2002), Determinants of the Prevalence of Start-ups and High-Performance Firms: *Small Business Economics*.
10. Deloof, M. (2003). Does working capital management affect profitability of Belgian firms? *Journal of Business Finance and Accounting*.
11. Djankov Simeon, Rafael La Porta, Florencio Lopezde- Silanes and Andrei Shleiler (2000), "The regulation of entry" Harvard Institute of Economic Research.
12. Foreman-Peck, J., Makepeace. G. and Morgan, B. (2006), Performance and profitability of small and medium-sized enterprises; Some Welsh evidence. *Regional Studies*, 40:4.
13. Garoma, B. F. (2012), Determinants of microenterprise success in the urban informal sector of Addis Ababa: a multidimensional analysis.
14. Glancey, K. (1998), Determinants of performance and profitability in small entrepreneurial firms. *International Journal of Entrepreneurial Behaviour and Research*, Vol. 4 No. 1.
15. Goddard, J., Tavakoli, M. and Wilson, J. (2005), Determinants of profitability in European manufacturing and services: evidence from a dynamic panel model. *Applied Financial Economics*, 15:18.
16. Hagen, K.P. and Sannarnes, J.G. (2007), Network ownership and Optimal Tariffs of Natural Gas Transport. *Accessing Pricing: Theory and Practice*; Elsevier



17. Hallberg, K. (2000), A Market-Oriented Strategy for Small and Medium Enterprises. In IFC Discussion Paper no. 40, The World Bank: Washington DC.
18. Honjo, Y. and Harada, N. (2006), SME policy, financial structure and firm performance, evidence from Japan: *Small Business Economics*, 27 (4). Insights from women entrepreneurs in Africa. Seed Working Paper No. 47 Series on Women's
19. Kalleberg, L. and Leicht, K. (1991), Gender and Organizational Performance: Determinants of Small Business Survival and Success. *Academy of Management Journal*, 34.
20. Kapunda, S.M., Magembe B.A.S. and Shunda, J. (2007), SME Finance, Development and Trade in Botswana: A Gender Perspective. *Business Management Review*, Vol 11(1).
21. Kira, A.R. and He, Z. (2012). The Impact of Firm Characteristics in Access of Financing by Small and Medium-sized Enterprises in Tanzania. *International Journal of Business and Management*; Vol. 7, No. 24.
22. Leung, S.F. and Yu, S. (1996), Collinearity and Two-Step Estimation of Sample Selection Models: Problems, Origins and Remedies. RCER Working Papers, 419, University of Rochester.
23. Mateev, M., and Anastasov, Y. (2010), Determinants of Small and Medium Sized Fast-Growing Enterprises in Central and Eastern Europe: A Panel Data Analysis. *Financial Theory and Practice*, 34 (3).
24. Mead D. C., and Liedholm C. (1998). The Dynamics of Micro and Small Enterprises in Developing Countries. *World Development Paper*, Vol. 26, No. 1.
25. Nickell, S. and Nicolitsas, D., (1999). How does financial pressure affect firms? *European Economic Review* 43, 8, 1435-1456.
26. Niskanen, L.K. and Niskanen, J. M. (2005), "Capital structure and firm performance in European SMEs: Does credit risk make a difference?", *Managerial Finance*, Vol. 45 No. 5
27. Okurut, F.N., Yinusa D.O. and Mangadi K. (2011), Credit Rationing and SME Development in
28. Olutunla, G.T and Obamuyi, T.M. (2008), An empirical analysis of factors associated with the profitability of Small and medium - enterprises in Nigeria. *African Journal of Business Management*, Vol. 2 (x).
29. Organisation for Economic Cooperation and Development (OECD) (2016). Small medium enterprises (SMES) in Turkey and Malaysia a comparative discussion on issues and challenges. *The Future of Participation Banks and New Banking Licenses in Turkey* turkey Islamic finance report 2014.
30. Salman, A.K., and Yazdanfar, D. (2012), Profitability in Swedish Micro Firms: A Quantile Regression Approach. *International Business Research*, Vol. 5, No. 8.
31. Storey, D.J. (1994), Understanding the Small Business Sector. London: International Thomson Business Press
32. Temtime, Z.T., and Pansiri, J. (2004), Small Business Critical Success/ Failure Factors in Developing Economies: Some Evidence from Botswana. *American Journal of Applied Sciences*, 1(1): 18-25.
33. Wiboonchutikula, P. (2002), Small and medium enterprises in Thailand: recent trends. *Small Business Economics*, 18 (1-3).
34. Woldie, A., Leighton, P., and Adesua, A. (2008), Factors influencing small and medium enterprises (SMEs): an exploratory study of owner/manager and firm characteristics. *Banks and Bank Systems*, Volume 3, Issue 3.
35. World Bank, (2020), *Sierra Leone: \$40 million to support SME Investments and Economic diversification*, Washington, DC: World Bank.
36. World Bank (2011). What the World Bank means by poverty reduction, and why it matters. P Cammack - *New Political Economy*.
37. Wren, C.M., and Storey, D.J. (2002). Evaluating the Effect of Soft Business Support upon Small Firm's Performance. *Oxford Economic Papers*, Vol. 54.