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## **SMEs Use of Informal Credit in Ghana: Do business size and sector matter?**

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### **Abstract**

This paper examined the effect of business size and sector on SMEs use of informal credit. By employing binary logistic regression analyses on a sample of 900 SMEs, a major finding is that micro and small enterprises have much urge for informal credit compared to medium enterprises. It was also revealed that SMEs in the manufacturing, construction and hospitality sectors relative to agriculture sector are less likely to use informal credit. Furthermore, we find evidence in support of the SME financing life cycle hypothesis. The study concludes that the use of informal credit is not the same for all SMEs; it differs across size and sector of SME.

**Keywords:** *Informal credit; SMEs; business size; sector; Ghana.*

**JEL codes:** *E22, O16.*

## 1. Introduction

The economic importance of Small and Medium Enterprises (SMEs) has long been noticed globally. SMEs contribute massively to employment and GDP in both developed and developing economies (Kongolo, 2010; Ayyagari *et al.*, 2011; Wang, 2016). Therefore, promoting the growth of SMEs will, to a large extent, deepen economic growth across countries. SMEs' growth however depends on several factors including access to credit. Sadly however, SMEs have been noted to be credit constrained (IFC, 2013; Domeher *et al.*, 2017). It must be pointed out that, the credit market which is a supplier of credit to SMEs as well as large businesses is segmented into two – *formal* and *informal* credit markets. The distinction between these two markets rests on the issue of regulation. Informal credit markets refer to credit sources that are not subject to regulation by central banks and other relevant state agencies. On the other hand, formal credit markets are credit sources that are regulated (Safavian & Wimpey, 2007; Ayyagari *et al.*, 2010; Hanedar *et al.*, 2014). Examples of informal credit sources include money lenders, loan sharks and family and friends whilst banks, savings and loans and microfinance companies are notable formal credit sources.

Although the concept of informal credit (credit from informal sources) exists in advanced economies, it is more visible in developing and emerging economies (Kislat, 2015). For instance, evidence from the Global Findex database shows that most new loans in high income OECD countries are taken from formal credit sources contrary to sub Saharan Africa where majority of loans are taken from family and friends (Demirguc-Kunt *et al.*, 2015). In Ghana, about 71.9% of SMEs rely mostly on informal finance for their operations (Forkuoh *et al.*, 2015). Furthermore, SMEs participation in the formal credit market in Ghana is low (Sekyi *et al.*, 2014; Domeher *et al.*, 2017).

While the use of informal credit is increasingly becoming popular amongst SMEs in a developing country like Ghana, the following questions remain unanswered; what are the determinants of SMEs use of informal credit? Does business size and sector really matter in the use of informal credit amongst SMEs? Indeed, in Ghana there are notable studies on informal credit including Aryeetey (1992) who examined the linkages between formal and informal financial markets, Schindler (2010) who looked at informal credit as a coping strategy for women traders and Forkuoh *et al.* (2015) who examined informal finance as an alternative finance for SMEs. However, studies on the determinants of SMEs' use of informal credit in Ghana remain scant; the only known study in this regard is some aspect of the work of Sekyi *et al.* (2014), which looked at factors influencing SMEs choice of credit source. However, their study did not consider the size and sector variations of these businesses. SMEs are categorized into micro, small and medium enterprises and according to Berger

and Udell's (1998) SME financing life cycle hypothesis, financing preferences of SMEs change as they increase in age and size. SMEs also span the various sectors of a nation's economy contributing their quota to economic development and these sectoral differences could result in differences in the use of informal credit. Therefore, the aim of this paper is to contribute to the sparse literature by examining the effect of business size and sector on SMEs use of informal credit. Additionally, the paper contributes to the literature by empirically testing the validity of the SMEs financing life cycle hypothesis. The remainder of the paper is organized as follows; section two provides a review of theoretical and empirical literature. Section three outlines the methodology. The analyses and discussion of results is presented in section four and section five, concludes and provides policy recommendation.

## **2. Literature Review**

### *2.1. The life cycle theory and SME financing*

Businesses are thought of as living organisms and as such go through a life cycle. From startup they go through a number of growth phases. The literature regarding the number of SME growth stages have been mixed. There is therefore no general consensus on the number of growth stages for SMEs. For instance, whilst Steinmetz (1969) propose three stages of SME growth, Lewis (1987) and D'Amboise and Muldowney (1988) suggest five growth stages. Nonetheless, the growth stage an SME finds itself determines the type of financing it requires. According to Berger & Udell's (1998) financing life cycle theory, financing preferences of SMEs change as they move along the trajectory of growth. SMEs that find themselves at the startup and nascent stage are usually associated with high incidence of information asymmetry (Huyghebaert & Van de Gucht, 2007; Hyytinen & Pajarinen, 2008). As a result, they depend mostly on personal and informal sources of credit, since formal lenders tend to relegate them to the background. This is because they usually lack good track record (Huyghebaert & Van de Gucht, 2007) and do not have enough assets to meet collateral requirements of formal lenders.

However, as SMEs advance along the growth path, their desire for informal credit wanes and their quest for formal credit increases. This is because as they grow, they come to a point where they are able to meet major requirements of formal lenders such as collateral (Domeher *et al.*, 2017) and evidence of good track record (Bhaire & Lucey, 2010). Hence, they tend to seek credit from formal sources. The above discourse reflects the fact that business age and size do matter in the choice of financing source. Even though the financing life cycle encompasses equity finance where startup businesses may subscribe to private equity and more mature and larger ones may go public, debt finance is emphasized since this is the focus of the paper.

## 2.2. *Formal and informal credit markets in Ghana*

Financial markets and credit markets in particular play crucial roles in economic development. Chijioke and Ogbuagu (2014) assert that a well-developed credit market is the foundation of economic development. Credit markets are basically segmented into two – formal and informal credit markets. In Ghana noncommercial sources such as family, friends as well as commercially based ones such as savings collectors, traders and money lenders amongst others constitute the informal credit market (Owusu-Antwi & Antwi, 2010). Bank and Non-bank financial institutions constitute the formal credit market of Ghana. Records from the Bank of Ghana show that currently the number of licensed commercial banks in Ghana stands at thirty-one (31) whilst the Non-bank financial institutions are about seventy (70). Most of the non-bank financial institutions are into the business of lending except credit reference bureaus and remittance companies. Regardless of the variety of formal credit sources available most SMEs seek credit from the informal sources. Some of the notable factors are stringent conditions by formal lenders and credit rationing (push factors) whilst pull factors such as low transaction cost and ease of access of informal credit are also worth mentioning. Nonetheless, firm owner characteristics and characteristics of the firm are also drivers of the use of informal credit.

## 2.3. *Determinants of informal credit use*

SMEs use of informal credit is attributable to a myriad of factors including various push and pull factors. However, informal credit market transactions are usually not properly documented making data on such transactions almost non-existent (Hanedar *et al.*, 2014). Therefore, this study focuses on individual level factors and firm level factors which are obtainable through surveys. The literature on these factors are discussed below;

### 2.3.1. *Individual level factors*

#### *Gender of the SME owner*

Gender of the SME owner greatly impacts the type of financing an SME is likely to go in for. Evidence around the globe suggests that female-owned SMEs are less likely to be granted credit by formal lenders. For instance, it is argued that females suffer greater restrictions in owning property than males (Nyari, 2001; Fayorsey, 2004; Powers & Magnoni, 2010). Hence, they often lack physical assets to pledge as collateral and are therefore mostly denied formal credit. Lack of collateral could therefore induce female SME owners to seek informal credit where collateral is not mostly required. Garwe and Fatoki (2012) investigated into gender of owner and access to credit amongst South African SMEs. The study revealed that female SME owners would not seek formal credit mainly because of the fear of rejection. Therefore, informal credit becomes an available option. In a similar study involving

seventeen European countries, Ongena and Popov (2015) had evidence to indicate that in countries where gender disparity exist female entrepreneurs are more discouraged from applying for formal credit. These discouraged female entrepreneurs are therefore more likely to turn to informal sources to meet their credit needs. Moro, Wisniewski and Mantovani (2017) also investigated the gender gap in SMEs access to formal credit based on a sample of European SMEs. The results showed that the fear of possible rejection makes female-owned SMEs less likely to apply for formal credit. While female SME owners are more discouraged from seeking formal credit, it is therefore expected in this study that female SME owners will have more likelihood of seeking informal credit than their male counterparts.

#### *Level of education of SME owner*

The level of education of the SME owner has been proven to influence SMEs access to credit. Irwin and Scott (2010) found that amongst SME owners in the UK, those with high level of education had less difficulty in accessing formal credit. Of course, highly educated SME owners have an advantage of better communicating the viability of their proposed projects to formal lenders than SME owners without education communicate. Hence, SME owners with less or no education have a higher probability of being denied formal credit. Therefore, informal credit becomes the surest alternative. In Ethiopia, Kebede *et al.* (2014) found that SME owners with no formal education compared to those with at least college education or its equivalent are less likely to seek formal credit. Nwangi and Sichei (2011) found in their study that education is positively related to formal credit use. In a related fashion Nikaido *et al.* (2015) argue that SME owners with low level of education have the feeling that they will be rejected by formal lenders due to greater difficulties that they face in the bank loan application process. It is therefore obvious that, highly educated SME owners will have less likelihood of seeking informal credit.

#### *Age of the SME owner*

Age of an individual generally refers the number of years attained by the individual since birth. The age of an SME owner is very crucial when it comes to issues relating to credit. Nguyen and Luu (2013) found age to be positive significant determinant of Vietnamese SMEs access to bank credit. Similarly, Ogubazghi and Muturi (2014) conducted a study on a sample of 87 SMEs in Eritrea. The results revealed that age of SME owner had a positive relationship with SMEs access to formal credit. Abdulsaleh and Worthington (2013) argue that information asymmetry which is a problem with most SMEs tend to decrease with advancement in SME owner age. Age to some extent is linked to experience (Akoten *et al.*, 2006; Nguyen *et al.*, 2015). Therefore, older SME owners are more likely to be granted formal credit than younger SME owners based on experience in a running a business. Mersha and Ayenew (2017) find age of the SME owner to be a positive significant determinant of

SMEs access to formal credit in Ethiopia. Younger SME owners are therefore more likely to patronize informal credit.

### 2.3.2. Firm level factors

#### *Size of firm*

Firms vary in sizes. The size of a firm is often determined using the various measures of size such as sales turnover, profitability/net worth and number of employees amongst others. These measures have been used to classify firms into micro, small, medium and large. It must be pointed out that micro and small firms with growth potential can transform into medium and bigger ones with time. While the various categories of businesses require credit, formal lenders have often tagged smaller firms as highly risky (Kumar & Francisco, 2005) for obvious reasons. For instance, compared to be bigger firms, smaller firms are associated with high incidence of information asymmetries (Gertler, 1998; Hyytinen & Pajarinen, 2008). Furthermore, smaller firms may have volatile earnings as a result of limited diversification opportunities (Hughes and Storey, 1994; Klapper *et al.*, 2002). Moreover, smaller firms may lack the pedigree to survive periods of economic downturn (Gertler & Gilchrist, 1994).

A study by Kumar and Francisco (2005) in Brazil revealed that there are differentials in firms' financing pattern across size categories; informal finance was found to be a major source of finance for micro enterprises. Hanedar *et al.* (2014) in a study involving selected European countries had evidence to indicate that business size is inversely related to SMEs use of informal credit. Yazdanfar and Abbasian (2013) examined the determinants of SMEs use of informal credit in Sweden. Results of the study revealed that business size is a negative significant determinant of SMEs use of informal credit. Domeher *et al.* (2017) had evidence to indicate that micro and small enterprises compared to medium enterprises in Ghana are less likely to have a bank loan. Micro and small businesses are therefore anticipated to use more of informal credit.

#### *Age of the SME*

Firms have age just as humans do. The age of a firm refers to the period the firm has been in existence. Haltiwanger *et al.* (2012) use five years as a basis to distinguish young firms from old firms. According to Haltiwanger *et al.* (2012) firms below five years are young firms whilst those above five years are old firms. It is argued that startups and young firms carry high risk. Hence, their probability of failure is very high. Even when these businesses survive, their high monitoring cost discourage formal lenders from dealing with them (Boocock & Woods, 1997; Jensen & McGuckin, 1997). Hence, they are often rationed out of the formal credit market. Gertler (1988) and Hoque *et al.* (2016) argue that the degree of information asymmetry is high

with young firms. Furthermore, young firms are disadvantaged in the sense that they often do not have long term relationships with formal lenders (Hoque *et al.*, 2016). Therefore, younger SMEs are more likely to use informal credit.

### *Sector of the SME*

The sector of an SME plays a crucial role in the financing of SMEs (Byiers *et al.*, 2010). Chakraborty and Mallick (2012) carried out sectoral analyses of US small businesses access to formal credit and the results revealed that small businesses in the manufacturing sector were the most credit constrained. This suggests that small businesses in the manufacturing may turn to informal sources to meet their credit needs. A study by Nguyen, Gan and Hu (2015) in Vietnam revealed that SMEs in the service sector were less likely to seek formal credit compared to SMEs in trade and industry. They argue that government policies tend to favour certain sectors than others, making SMEs in the disadvantaged sectors suffer greater constraints in accessing formal credit. Informal credit therefore will be an important alternative for SMEs in such sectors. In the Agriculture sector, Ugoani *et al.* (2015) assessed the constraints facing farmers seeking bank credit and had evidence to indicate that lack of collateral and convincing business plans were key factors accounting for the lack of access of credit to farmers. Balogun *et al.* (2016) found tax number, business plan and project value to be important predictors of construction SMEs access to formal credit. That is, construction SMEs with these attributes are likely to have access to formal credit. In other words, construction SMEs having no tax number, business plan as well as having smaller project values are more likely to be refused formal credit and hence will fall on other sources such as informal sources.

In Ghana, Domeher *et al.* (2017) had evidence to show that SMEs in the construction sector are more likely to have access to formal credit since they have much assets to pledge as collateral. Service sector SMEs by virtue of their line of business deal in intangibles and for that matter usually lack assets that could serve as collateral to secure formal credit (Silva & Carreira, 2010). Hence, they may experience greater rationing by formal lenders who usually require collateral as security. This factor may compel service sector SMEs to seek informal credit rather than formal credit. It is therefore anticipated that SMEs that provide services are more likely to seek informal credit.

### *Collateral*

Collateral is a very important determinant of access to credit, as emphasized in the literature on SME finance (Stiglitz and Weiss, 1981; Berger & Udell, 2006). Due to the high risk and transaction costs associated with SME lending (Berger & Udell, 2006), collateral is often required to serve as protection for lenders against defaulting borrowers. The availability of tangible (fixed) assets in a firm's asset structure is quite vital. This is because fixed assets can be used as collateral, hence addressing



the problem of moral hazard (Bebczuk, 2004) and potential losses of the lender. It is important to point out that informal lending relies on ‘social collateral’ (relationship between borrower and lender) unlike formal lending which depends much on ‘physical collateral’ (Karaivanov & Kessler, 2018). Bougheas *et al.* (2006) found collateral to be an important determinant of access to formal credit in the United Kingdom. A study by Osano and Languitane (2016) in Mozambique revealed that collateral was a key requirement for banks to grant credit to SMEs. Contrarily, in India, Nikaido *et al.* (2015) found that collateral (measured by ratio of land to fixed assets) is a negative significant determinant of SMEs access to formal credit. The result was attributed to obsolete land administration systems and high cost associated with the use of land as collateral amongst others. In a similar study, Pandula (2011) found no significant relationship between asset tangibility (measured as the ratio of tangible net fixed assets to total assets) and access to formal credit amongst 228 Sri Lankan SMEs. SME owners with collateral are therefore less likely to seek informal credit.

#### *Distance to formal credit source*

Proximity of the lending institution to borrower and vice versa is very crucial in lending (Degryse & Ongena, 2005; Kumah, 2011). Gine (2011) documented that the transaction cost to evaluate the creditworthiness of a firm is likely high in rural areas, hence banks are less willing to lend to firms in the rural or long-distance areas. Relatedly, Degryse and Ongena (2005) argue that the geographical distance between borrower and lender is relevant for loan pricing. Agarwal and Hauswald (2010) show that the proximity between bank and borrower is a source of local informational advantage and increases formal credit availability. Jiménez *et al.* (2009) show that the distance, measured as the distance between the headquarters of the bank and the location of the borrower, matters for the use of credit for SME’s loans in Spain. Due to this difference, specific financial institutions have emerged, in particular informal lending. Informal lenders address information and incentive problems in lending by their proximity to the borrower. It is therefore expected that SMEs closer to formal credit sources are less likely to seek informal credit.

### **3. Methodology**

The survey approach of research design was adopted for the study. The survey was conducted in the Greater Accra region in 2017. A structured questionnaire was the instrument used to collect data on SMEs from the retail sector, manufacturing sector, transport sector, construction sector, hospitality sector and agriculture sector. Petty traders constituted the retail sector. In the manufacturing sector, entrepreneurs involved in the production of various products were sampled. Car dealers constituted the transport sector whilst businesses involved in the design and construction of roads and houses formed the construction sector. Farmers constituted the agriculture sector



and Owners of hotels, guest houses and hostels formed the hospitality sector. Greater Accra was chosen because it is the region where the capital and largest commercial city in Ghana (Accra) is located. Therefore, it is believed that many SMEs will be in this region to take advantage of the capital city. Stratified sampling technique was used where each of the sectors in this study was considered as a stratum.

The population of the study is all SMEs in the Greater Accra region. However, the exact population of SMEs in the Greater Accra region is unknown as such the researchers decided to conveniently sample 1,500 SMEs with 250 each from each sector. Data was collected by the researchers together with six (6) research assistants. SME owners who were literates were each given a questionnaire to complete whilst the illiterate ones were guided by field officers to complete the questionnaire. The number of questionnaire returned in each of the sectors was around 155. After taking out damaged questionnaire, we settled on 150 each from each sector making a total of 900. The response rate is therefore 60%. A response rate between 50% and 80% is considered acceptable in business and management research (Baruch & Holtom, 2008).

### 3.1. The econometric model

Following the approach of similar studies such as Kebede *et al.* (2014) and Fufa (2016), binary logistic regression model was adopted in this study. Binary logistic regression is well suited for modeling phenomena whose response variable are dichotomous / has two outcomes (Peng, Lee and Ingersoll, 2002). In this study the dependent variable is SMEs use of informal credit which is dichotomous (See description of variables in Table 1), hence the choice of the binary logistic model. The central concept that underlies binary logistic regressions is the logit (defined as the natural logarithm of an odd). That is, logistic regressions relate the predictor variables to the log odds or the logit. The simplest binary logistic model is as follows:

$$\text{Logit}(Y) = \ln \frac{y}{1-y} = \alpha + \beta X \quad (1)$$

where  $\frac{y}{1-y}$  is the odds,  $\alpha$  denotes the intercept on the vertical,  $\beta$  is the coefficient and  $X$  is the predictor variables. For multiple predictor variables, the logistic regression model becomes

$$\text{Logit}(Y) = \ln \frac{y}{1-y} = \alpha + \sum_{i=1}^n \beta_i X_i \quad (2)$$

Taking anti log of both sides and rearranging yields

$$y = \frac{e^{\alpha + \sum_{i=1}^n \beta_i X_i}}{1 + e^{\alpha + \sum_{i=1}^n \beta_i X_i}} \quad (3)$$

<sup>1</sup>. Where  $q_0$  is the true value of  $q$ .

which is the functional form of the binary logistic model which predicts the likelihood of a particular outcome.

### 3.1.1. Specification of the model

The model is specified as;

$$\text{Logit } Y = \ln\left(\frac{Y}{1-Y}\right) = f(\text{Agener}, \text{Educ}, \text{Gen}, \text{Busage}, \text{Busize}, \text{Sec}, \text{Colla}, \text{Dist.}, \text{Loansize}) \quad (4)$$

which can be written in explicit form as

$$\begin{aligned} \text{Logit}(Y) &= \ln\left(\frac{Y}{1-Y}\right) \\ &= \alpha + \beta_1 \text{Agener} + \beta_2 \text{Educ} + \beta_3 \text{Gen} + \beta_4 \text{Busage} + \beta_5 \text{Busize} + \beta_6 \text{Sec} + \beta_7 \text{Colla} \\ &\quad + \beta_8 \text{Dist} + \beta_9 \text{Loansize} \end{aligned} \quad (5)$$

which can be written in functional form as,

$$Y = \frac{e^Z}{1 + e^Z} \quad (6)$$

where

$$Z = \alpha + \beta_1 \text{Agener} + \beta_2 \text{Educ} + \beta_3 \text{Gen} + \beta_4 \text{Busage} + \beta_5 \text{Busize} + \beta_6 \text{Sec} + \beta_7 \text{Colla} + \beta_8 \text{Dist} + \beta_9 \text{Loansize} \quad (7)$$

$Y$  is the dependent variable and denotes the likelihood of use of informal credit.  $\text{Agener}$  is the age of the SME owner,  $\text{Gen}$  is the gender of SME owner,  $\text{Educ}$  represents educational level of SME owner,  $\text{Busage}$  is the age of the business itself and  $\text{Busize}$  is the size of the business. The sector of the business is captured by  $\text{Sec}$  while  $\text{Colla}$  represents collateral,  $\text{Dist}$  is distance to credit source and  $\text{Loansize}$  denotes loan size. Alpha ( $\alpha$ ) is a constant while  $\beta_1, \beta_2, \beta_3, \dots, \beta_9$ , are coefficients to be estimated.

**Table 1: Description of variables**

Variable	Notation	Type	Description
Dependent Variable			
Use of Informal credit	Y	Dummy	0 = do not use informal credit 1 = Use informal credit
Independent Variables			
Age of SME owner	Age	Continuous	Age in years
Gender of SME owner	Gen	Dummy	0 = Female 1 = Male
Educational level of SME owner	Educ	Categorical	1 = no formal education 2= Primary school 3= JSS/Middle School 4= SSS/SHS/ Vocational School 5 = Tertiary
Age of the business	Busage	Dummy	0 = young 1 = old
Size of the business	Busize	Categorical	1= Micro 2 = Small 3= Medium
Sector of the business	Sec	Categorical	1 = Retail 2 = Manufacturing 3 = Transport 4= Construction 5= Agriculture 6 = Hospitality
Collateral	Colla	Continuous	Number of physical assets
Distance to formal credit source	Dist.	Continuous	Number of minutes spent
Loan size	Loansze	Continuous	Amount required in cedis

**Notes:** Size of business is based on the number of employees' criterion of Teal (2002)

Age of the business is based on the criterion of Haltiwanger et al. (2012).

## 4. Results and Discussion

### 4.1. Summary statistics

The survey's summary statistics are presented in Table 2. In terms of age, 7.8% of the respondents were aged either less than 18 years or greater than 60 years whilst 92.2% were aged between 18 and 60 years. Regarding gender, 68.7% of the 900 respondents were male and the remaining 31.3% were female. This suggests that most SMEs in Ghana are male owned.

**Table 2: Summary statistics**

Categories		N = 900	Valid %
<b>SME owner characteristics</b>			
Age	< 18 years and > 60years	70	7.8
	18 - 60 years	830	92.2
Gender	Male	618	68.7
	Female	282	31.3
Education	No formal education	250	27.8
	Primary	198	22.0
	JSS/Middle School	174	19.3
	SSS/SHS/ Vocational School	163	18.1
	Tertiary	115	12.8
Marital status	Not married	306	34.0
	Married	594	66.0
<b>Business Characteristics</b>			
Size of SME	Microenterprise	348	38.7
	Small enterprise	342	38.0
	Medium enterprise	210	23.3
Sector of the SME	Retail	121	13.4
	Manufacturing	122	13.6
	Transport	133	14.8
	Construction	181	20.1
	Agriculture	173	19.2
	Hospitality	170	18.9

*Source: Survey data, 2017*

In terms of education, 27.8% had no formal education at all, 22% had primary education, 19.3% were educated to the JSS/JHS/ Middle school level. Furthermore, 18.1% had been to SSS/SHS/Vocational School whilst 12.8% who are in the minority had tertiary education. 66% of the SME owners were married and the remaining 34% were not married. 38.7% of the businesses surveyed were micro enterprises (less than 5 employees), 38% were small enterprises (5 – 29 employees) and 23.3 were medium enterprises (30 -99 employees). Table 2 also gives the sectoral classification of SMEs in this survey. 13.4% of the SMEs were from the retail sector, 13.6% from the manufacturing sector, 14.8% from the transport sector, 20.1% from the construction sector, 19.2% from agriculture and 18.9% from the hospitality sector.

Descriptive statistics of continuous variables are presented in Table 3. The minimum loan size required by the SMEs in this sample was Ghc 200 whilst the maximum was Ghc 25,000.00. This clearly indicates that whilst some SMEs required relatively smaller amounts others required bigger amounts. The least age of the businesses surveyed was one year and the maximum age 35 years. This suggests that the sample consist of young and old businesses. According to Haltiwanger *et al.* (2012), firms below five years are young firms whilst those above five years are

considered to be old firms. On the average the SMEs had about three fixed assets to pledge as collateral which is good in promoting credit access. In terms distance, the average time taken to reach a formal credit source as shown on Table 3 was forty two (42) minutes.

**Table 3: Descriptive statistics of continuous variables**

	Loan size	Age of business	Collateral	Distance to formal credit source
Minimum	200	1	1	5
Maximum	25000	35	9	300
Mean	2365.93	10.75	2.88	42.33
Standard deviation	4039.84	6.93	1.42	49.44

*Notes:* Number of observations = 900

*Source:* Survey data, 2017

#### 4.2. Sources of credit for the SMEs

The SMEs sought credit from various sources. Table 4 below gives details about the various sources from which the SMEs in this survey sought credit. 20.9% representing the majority borrowed from moneylenders followed by microfinance institutions (19.8%). 18.0% borrowed from traditional susu collectors, 14.6% each borrowed from family and friends and universal banks. Finally, 12.2% borrowed from savings and loans institutions. Overall, 481 SMEs representing about 53.5% of the 900 SMEs borrowed from informal sources. The result confirms the finding of Forkuoh *et al.* (2015) that there is high level of informal finance use amongst SMEs in Ghana. The result is also consistent with the findings of Sekyi *et al.* (2014) and Domeher *et al.* (2017) that SMEs participation in the formal credit market in Ghana is low.

**Table 4: Sources of credit for SMEs**

	N = 900	Valid Percent
Universal bank	131	14.556
Microfinance Institution	178	19.778
Savings and loans	110	12.222
Money lender	188	20.889
Traditional susu collector	162	18.000
Family and friend	131	14.556

*Source:* Survey data, 2017

### 4.3. Use of Informal credit across size categories of businesses

The use of informal credit was investigated across size categories of the businesses. Table 5 below presents a cross tabulation between size of business and the type of credit used. Amongst the 348 micro enterprises in this survey, about 64.1 % borrowed from informal sources implying that 64.1% of micro enterprises used informal credit. For small businesses, about 52.9% used informal credit whilst remaining 47.1% used formal credit. Contrarily, a greater proportion of medium enterprises (63.3%) used formal credit. This result clearly shows that the smaller the business the more likelihood of its use of informal credit. A major reason for this result is that due to high information asymmetries associated with micro and small enterprises (Hyytinen & Pajarinen, 2008), majority are often rejected by formal lenders making them to turn to informal sources of credit. The result supports the argument of Fufa (2016) that medium enterprises are less likely to use informal credit.

The chi square test gives a confirmation that there is a significant relationship between size of business and credit type used.

**Table 5: Size of business and type of credit used**

			Credit type		Total
			Formal	Informal credit	
Size of the business	Microenterprise	Count	125	223	348
		% within Size of the business	35.9%	64.1%	100.0%
		% within credit type	29.8%	46.4%	38.7%
		% of Total	13.9%	24.8%	38.7%
	Small enterprise	Count	161	181	342
		% within Size of the business	47.1%	52.9%	100.0%
		% within credit type	38.4%	37.6%	38.0%
		% of Total	17.9%	20.1%	38.0%
	Medium enterprise	Count	133	77	210
		% within Size of the business	63.3%	36.7%	100.0%
		% within credit type	31.7%	16.0%	23.3%
		% of Total	14.8%	8.6%	23.3%
Total	Count	Count	419	481	900
		% within Size of the business	46.6%	53.4%	100.0%
		% within credit type	100.0%	100.0%	100.0%
		% of Total	46.6%	53.4%	100.0%
Pearson chi-square	df	Sig.			
		39.618 <sup>a</sup>	2	.000	

**Table 6: Sector of SME and type of credit used**

Sector of SME		Credit type		Total
		Formal	Informal credit	
Retail	Count	41	80	121
	% within Sector of SME	33.9%	66.1%	100.0%
	% within credit type	9.8%	16.6%	13.4%
	% of Total	4.6%	8.9%	13.4%
Manufacturing	Count	54	68	122
	% within Sector of SME	44.3%	55.7%	100.0%
	% within credit type	12.9%	14.1%	13.6%
	% of Total	6.0%	7.6%	13.6%
Transport	Count	47	86	133
	% within Sector of SME	35.3%	64.7%	100.0%
	% within credit type	11.2%	17.9%	14.8%
	% of Total	5.2%	9.6%	14.8%
Construction	Count	116	65	181
	% within Sector of SME	64.1%	35.9%	100.0%
	% within credit type	27.7%	13.5%	20.1%
	% of Total	12.9%	7.2%	20.1%
Hospitality	Count	106	64	170
	% within Sector of SME	62.4%	37.6%	100.0%
	% within credit type	25.3%	13.3%	18.9%
	% of Total	11.8%	7.1%	18.9%
Agriculture	Count	55	118	173
	% within Sector of SME	31.8%	68.2%	100.0%
	% within credit type	13.1%	24.5%	19.2%
	% of Total	6.1%	13.1%	19.2%
Total	Count	419	481	900
	% within Sector of SME	46.6%	53.4%	100.0%
	% within credit type	100.0%	100.0%	100.0%
	% of Total	46.6%	53.4%	100.0%
Pearson chi-square	df	Sig.		
69.360 <sup>a</sup>	5	.000		

**Note:** a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 56.33.

#### 4.4. Use of Informal credit across SME sub sectors

The use of informal credit on a sectoral basis is reported in Table 6. The results show that 66.1% of retail SMEs used informal credit. Similarly, there was high level



of informal credit use amongst SMEs in the manufacturing and transport sectors represented by 55.7% and 64.7% respectively. SMEs in the agriculture sector also showed a high level of informal credit use. Ugoani *et al.* (2015) argue that agriculture based SMEs lack the need collateral to pledge for formal credit. This makes them rely much on informal sources to meet their credit needs. On the contrary, SMEs in the construction and hospitality sectors demonstrated low level use of informal credit. About 35.9% of SMEs in the construction sector used informal credit and 37.6 % of SMEs in the hospitality sector used informal credit.

The result in Table 6 clearly suggests that the use of informal credit varies across SME subsectors. SMEs in the retail, manufacturing, transport and agriculture sectors have high level use informal credit whilst SMEs in construction and hospitality sectors largely use formal credit. The issue of collateral and size of loan required is crucial in explaining these differences. Construction and hospitality SMEs may be better positioned in terms of collateral to access formal. Furthermore, construction and hospitality sector SMEs may require bigger loan amounts that informal lenders may be unable to provide.

#### 4.5. Binary logistic regression results

The cross tabulations presented above tell a pattern and association but not causal effect. There was therefore the need for a more rigorous analysis to ascertain the causal relationship, hence the binary logistic regression analyses. Prior to the binary logistic regression analyses, a test of robustness of the model were carried out and the results shown in Tables 7 and 8. A test of multicollinearity was conducted using the Variance Inflation Factor (VIF). The tolerance is beyond 0.1 and the mean VIF is less than 10. According to Pallant (2010) a tolerance above 0.1 and VIF below 10 suggests that there is no problem of multicollinearity.

The *linktest* and the Ramsey RESET tests were conducted to ensure that the model was correctly specified. The *hat* was significant ( $p = 0.000$ ) while *hatsq* was insignificant ( $p = 0.547$ ) suggesting that the model is correctly specified.

The Ramsey RESET tests was specifically conducted to check for omitted variable bias and the results reported an  $F(3, 879) = 1.37, P=0.2520$ . Hence the hypotheses that the model has no omitted variable cannot be rejected at 5% level of significance. It is therefore concluded that there is no specification error in the estimated model. This result reinforces the conclusion that the model is correctly specified and all the relevant variables are incorporated in the estimated model.

The goodness-of-fit of the model was also ascertained to be sure that the model properly fit the data. For consistency, the Hosmer-Lemeshow and the Pearson tests of goodness of fit were adopted for that purpose. The Hosmer-Lemeshow test returned chi-square (1) = 0.08,  $p = 0.7805$ . Similarly, the Pearson test for goodness of fit

returned chi-square (879) = 900.05,  $p = 0.3036$ . Therefore, the hypothesis that the model correctly fits the data cannot be rejected.

Finally, the Breusch-Pagan/Cook-Weisberg test was conducted to check for non-violation of the homoscedasticity assumption. The result was a chi-square (1) = 0.33,  $p = 0.5665$  suggesting that there is no problem of heteroscedasticity. In all, both the diagnostic tests and the post estimation statistics show that the model is robust and appropriate.

**Table 7: Test of multicollinearity**

Variable	VIF	Tolerance
Age	1.01	0.995484
Gender	1.03	0.972227
Marital status	1.00	0.995484
Education	1.02	0.984882
Age of the business	1.07	0.937095
Size of the business	1.07	0.932497
Sector of the business	1.03	0.974649
Collateral	1.03	0.968971
Distance	1.00	0.997770

*Note: Mean VIF 1.03*

Results of the binary logistic regression (See Table 8) show that SME owners with no formal education are more likely to use informal credit compared to those with tertiary education. The odds ratio of 1.587 suggests that SME owners with no formal education are 1.587 times more likely to use informal credit compared to those educated to tertiary level. In other words, SME owners with tertiary education are more likely to seek formal credit. This is quite understandable because highly educated SME owners have the ability to communicate the viability of their proposed projects to formal lenders than those without formal education. Hence, they become more appealing to formal lenders. The result supports the finding of previous studies (Irwin & Scott, 2010; Kebede *et al.*, 2014; Nikaido *et al.*, 2015).

The relationship between age of business and SMEs use of informal credit was also investigated. The results revealed a significant inverse relationship between age of business and the likelihood of an SME to use informal credit. That is, an increase in the age of an SME by one year makes the SME .951 times less likely to use informal credit. This could be attributed to the fact that advancement in age speaks well of managerial competence of the SME owner and good track record of the business (Diamond, 1991), which makes the business better positioned for formal credit rather than informal credit. Furthermore, increase in age leads to improvement in asset

structure making older SMEs have much ability to meet collateral requirements of formal lenders (Makoni and Ngcobo, 2014). Informal lenders however do not stress much on collateral. It is therefore quite obvious that younger SMEs who usually have no much assets to be used as collateral will prefer informal credit. Hoque *et al.* (2016) have also argued that the degree of information asymmetry is high with young firms, making them less appealing to formal lenders. The result also supports Berger and Udell's (1998) SMEs financing life cycle hypothesis which postulates that as businesses' increase in age they move away from informal credit.

Regarding size of the business and the likelihood of an SME's use of informal credit, the results revealed that micro and small enterprises relative to medium enterprises are more likely to use informal credit. That is, the likelihood of informal credit use is higher amongst micro enterprises than small enterprises. Formal lenders are reluctant to lend to micro and small enterprises due to their relative opaqueness (Hyytinen & Pajarinen, 2008). This therefore promotes the use of informal credit amongst micro and small businesses. Moreover, micro enterprises often require small loan amounts which they can easily get from family, friends and other informal sources compared to formal lending institutions. This result is consistent with the finding of Fufa (2016) in Ethiopia that micro enterprises are less likely to use formal credit. Also, micro and small businesses are noted to lack the needed assets to pledge as collateral for formal credit (Quartey *et al.*, 2017).

On a sectoral basis, the agriculture sector was used as a reference category. The results show that SMEs in the manufacturing are less likely to use informal credit. This is quite understandable since manufacturing sector SMEs deal in tangibles and may have the needed collateral to seek formal credit.

The results also show that construction SMEs have less likelihood of informal credit use. The odds ratio of .352 indicates that SMEs in the construction sector are .352 times less likely to use informal credit compared to Agriculture based SMEs. This is so because collateral may not necessarily be a problem to construction SMEs, hence they stand a better chance of being granted formal credit (Domeher *et al.*, 2017). Furthermore, construction SMEs may require bigger loan amounts that informal credit sources may be unable to grant. Similarly, SMEs in the hospitality sector have less likelihood of informal credit use. An odds ratio of .299 suggests that hospitality SMEs are .299 times less likely to use informal credit. This result was expected since hotels, hostels and guest houses constituted SMEs in the hospitality sector. The physical structures of these businesses are enough collateral to be used to secure credit from formal sources.

Regarding collateral, the results indicate that a unit increase in the number of physical assets used to pledge as collateral makes an SME less likely to use informal credit. That is, SMEs with more physical assets are likely to go in for formal credit

rather than informal credit. This finding lends support to that of Bougheas *et al.* (2006) and Osano and Languitone (2016) that collateral is a key requirement for formal loans.

**Table 8: Binary logistic regression results**

	Coefficient	S.E.	Wald	df	Sig.	Odds ratio
Constant	.989**	.478	4.272	1	.039	2.689
Age	.010	.266	.001	1	.971	1.010
Gender (Male Owner)	.076	.162	.219	1	.640	1.079
Marital Status	-.059	.154	.147	1	.701	.943
Education (ref: Tertiary education )						
No formal education	.462*	.245	3.557	1	.059	1.587
Primary	.232	.253	.838	1	.360	1.261
JSS/JHS/Mid sch	.422	.259	2.650	1	.104	1.525
SSS/SHS/ Voc	.233	.263	.785	1	.376	1.263
Age of business	-.050***	.011	19.747	1	.000	.951
Size of business (ref: Medium )						
Micro	.748***	.200	13.985	1	.000	2.112
Small	.339*	.196	2.992	1	.084	1.404
Sector of business (ref: Agriculture )						
Retail	-.127	.263	.234	1	.629	.881
Manufacturing	-.551**	.262	4.442	1	.035	.576
Transport	-.083	.263	.099	1	.753	.921
Construction	-1.043***	.241	18.799	1	.000	.352
Hospitality	-1.209***	.237	25.960	1	.000	.299
Distance	-.001	.001	.852	1	.356	.999
Collateral	-.156***	.053	8.626	1	.003	.856
hat	0.9971***	.095			0.000	
hatsq	0.0596	.099			0.547	
Condition index	16.26					
Hosmer-Lemeshow chi-square (1)	0.08					
Prob > chi-square	0.7805					
Pearson chi-square (879)	900.05					
Prob > chi-square	0.3036					
Ramsey RESET test: F(3, 879)	1.37					
Prob > F	0.2520					
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity						
Chi-square (1)	0.33					
Prob > chi-square	0.5665					

**Notes:** \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$  and \*  $p < 0.1$

## 5. Conclusion and Policy Implications

The use of informal credit is increasingly becoming popular amongst SMEs in recent times. This study investigated into the determinants of SMEs use of informal credit with particular emphasis on business size and sector. Micro and small enterprises were found to have high level use of informal credit. The high level use of informal credit amongst micro and small enterprises may pose serious consequences on the growth of micro and small enterprises since most informal lenders charge high interest rates which may erode the benefits derived from taking such loans. To this end, relationship lending is the way out to promote formal credit access to these vulnerable businesses that easily rely on informal credit. SMEs in the construction and hospitality sectors had less likelihood of the use of informal credit. The implication is that, SMEs in some sectors are more credit rationed in the formal credit market than others. In this regard, policies to promote formal credit access for SMEs in sectors such as agriculture and transport amongst others that experience greater credit rationing by formal lenders are recommended. For instance, the setting up of Agricultural Development Bank to promote formal credit access to the agriculture sector is a step in the right direction.

The study concludes that the use of informal credit must not be seen to be same amongst SMEs. There are variations in the use of informal credit across size and sector of SMEs. Furthermore, we find evidence in support of the SME financing life cycle hypothesis.

## 6. Limitation of the Study

The authors had difficulty in the determination of required sample size for the study due to their inability to have the exact population of both registered and non-registered SMEs from the relevant institutions. However, for a study of this nature, a sample size of 1500 is large enough to give reliable results.

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