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Analysis of External Financing Use: A Study of Small and Medium Enterprises in Malawi

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Abstract

This study analyzes whether firm characteristics including firm size, firm age, availability of information, firm growth and industry significantly determine SMEs' use of external financing or not and whether there are differences in the use of external financing between firms of different sizes and industries or not. Using firm level data from the World Bank Enterprise Survey, a fractional logit regression model was employed. The results indicate that firm size, availability of information and firm growth significantly determine the use of external financing, while firm age and industry are not important in determining the use of external financing. The results also indicate that there are significant differences in the use of external financing between small and medium firms, with small firms using less external financing compared to medium firms. The results suggest a need for interventions that take into account firm size example of such intervention is the special financing scheme that targets firms of different sizes. This may help those firms with difficulties to easily access external financing. The results also suggest a need for interventions that encourage SMEs to have proper financial information.

Keywords: external financing, fractional regression, SMEs, information asymmetry

1. Introduction

Small and medium enterprises play an important role in providing employment, improving people's livelihood and in the overall economy. In recognition of the role that SMEs play in the economy, the government of Malawi has made the development of SMEs a priority. (MSME policy 2007)

The definition of enterprise size as stipulated in the Malawi SMEs policy is based on the number of employees and annual turnover. Micro enterprises are defined as firms with 1 to 4 employees and an annual turnover of USD $7143. Small enterprises are defined as firms with 5 to 20 employees and an annual turnover of USD $7143 to $71428. Medium enterprises are defined as firms with 21 to 100 employees and an annual turnover of $71428 to $357 142. Large enterprises are defined as firms with more than 100 employees and an annual turnover of more than $357142.

According to the business information register (2008-2009) prepared by the National Statistical Office of Malawi and the Malawi confederation chamber of commerce, there are 3027 establishments operating in the non agricultural sector of the economy. About 19.9% of these establishments operate in the manufacturing sector and 80.1% operate in the services sector.

The register indicates that 44.9%, 33.2%, 21.8% of the firms operating in the manufacturing sector are small, medium and large respectively. On the other hand for firms operating in the services sector the register indicates that 78.4% are small firms, 16.2% are medium firms and 5.4% are large firms. It is clear that a larger percentage of firms operating in both the manufacturing and services sector are small.

In terms of external financing use, the World Bank enterprise survey country profile report (2009) indicates that 15 % of the firms in Malawi use bank financing which is higher compared to 10% of the firms using bank financing in other sub-Saharan African countries. 2.9%, 2%, 1.4% of the firms in Malawi use trade credit financing, equity financing and other sources of financing respectively. Use of trade credit financing and equity financing is lower in Malawi compared to other sub-Saharan African countries which is 3.3% for trade credit

financing and 1.4% for equity financing.

The World Bank enterprise survey country profile report (2009) also indicates that only 4.5% of the small firms use bank financing while 18.4% of the medium firms and 28.7% of the large firms use bank financing. For trade credit financing 0.6%, 4.9% and 3.1% of the small, medium and large firms respectively use trade credit financing in Malawi. For equity financing 2.3% of the small firms, 1.1% of the medium firms and 3.3% of the large firms use equity financing.

Studies indicate that small firms face a lot of problems in doing businesses. These problems include limited access to finance, poor transportation, unreliable power supply, exorbitant tax rates, inadequately educated workforce, crime, complicated business licensing procedures, corruption and limited access to land (World Bank Business Environment Survey (2009), Mahadea & Pillay (2008), Kazooba (2006), Chirwa (2008)). These problems hinder their growth and survival and consequently their contribution to the economy.

Beck and Kunt (2006) point out that although they account for a significant part of the total employment in many countries such as in Malawi, SMEs may not be able to contribute to economic growth because they face many growth obstacles (pp. 2941).The World Bank Enterprise Survey (2009) for Malawi shows that 45.6% of the firms reported limited access to finance as a major obstacle to their business. Of the remaining firms, 8.9% reported poor transportation, 8.6% percent reported unreliable power supply, 6.2% reported exorbitant tax rates, 4.9% reported inadequately educated workforce, 3.8% reported crime, 3.6% reported complicated business licenses/ permits procedures, and 2.5% reported corruption and 1.7% reported limited access to land as obstacles to their businesses.

On the other hand, Chirwa (2008) found that finance, competition, marketing and supplier problems faced by women managed SMEs in Malawi were significant determinants of performance. Kazooba (2006) examined the causes of business failure in Uganda and his study found taxation, electricity, lack of proper business skill and competition as major causes of business failure in the country. The author points out that introduction of tax such as value added tax put a burden on small businesses and hinder their operations and survival and consequently their contribution to the economy. Mahadea and Pillay (2008) examined the factors that constrain the development of SMEs in South Africa. The authors' findings are similar to those by the World Bank, Kazooba (2006) and Chirwa (2008). Mahadea and Pillay (2008) found that apart from financing problems other problems such as taxation, regulation/law, crime rates and competition constrain the growth and development of SMEs in South Africa.

Among the obstacles such as access to finance, property rights protection, provision of infrastructure, taxes and regulations, corruption and macroeconomic environment that were investigated, Ayyagari et al (2007) showed that financing obstacles have the largest direct effect on the growth of a firm. Beck et al (2006) also found that higher financing obstacles reported by small enterprises translate into slow growth which further constrains them from growing to their optimal size. The authors also found that the effect of financing obstacles on annual growth in small firms is twice the effect that financing obstacles have in large firms. Thus, they show the role that firm size play in determining access to external finance which in turn affects growth.

One of the reasons size may play a role in the financing behavior of firms is asymmetry of information. Most small firms are said to be less transparent with information. This is because most small firms keep their operations private, lack publicly available information such as detailed financial information and have no credit history which providers of external finance can use to assess their creditworthiness and monitor their performance. This result in higher cost of lending to small firms which makes it difficult for small firms to obtain external financing (Udell and Berger; 1998). As such, small firms are less likely to use external finance than large firms. Beck et al (2008) showed that small firms finance a lower proportion of their investments externally. In the case of Brazil, Kumar and Francisco (2005) showed that firm size is an important determinant of financing patterns of SMEs as it has a significant effect on access to credit. The study revealed that large and medium firms are more likely to access credit. In the case of Ghana, Aryeetey et al (1994) also found that small firms have greater problems to access credit than large firms. Lean and Tucker (2001) examined how small firms obtain their finance and the financing constraints they experience with reference to the problem of information asymmetry. The authors found a significant relationship between size and use of external financing. Their findings also showed that small firms experience similar constraints such as poor collateral and lack of financial track record to access financing. The authors emphasize that some of the problems that constrain small firms' access to finance point to the important role that availability of information play in the financing of small firms.

Asymmetry of information can also result in adverse selection and moral hazard problems which can constrain

small firm's access to finance. Adverse selection problems arise when providers of external finance have incomplete information about the quality of project by small firms. Adverse selection may arise when a pool of riskier borrowers are willing to access external financing. External financiers may be willing to provide financing to such borrowers but at a high interest rate. However as the interest rate increases more of such borrowers with high probability of default are enticed to borrow and safer borrowers are pushed away. Beck (2007) points out that the impossibility of using interest rate to address the adverse selection problem may lead to the use of other screening methods and consequently may lead to credit rationing. This may prevent SMEs from accessing external finance because they are usually considered as risky investments.

On the other hand moral hazard problems arise when management of small firms fail to perform as expected and when providers of external finance fail to effectively enforce the agreed contracts. (Beck (2007), Lean and Tucker (2001)). High cost of monitoring and enforcing of contracts on small firms may lead to failure on the part of providers of external finance to effectively monitor and enforce the credit contract. This may lead to moral hazard problems such as diverting finances made available to them for quality projects to other risky projects. Thus moral hazard problems may force providers of external finance to ration credit, request for strict collateral requirements or simply reject application for credit.

Deakins et al (2008) investigated the ability of SMEs to access debt finance from commercial banks in Scotland. The authors investigated whether informational and reputational effects can lead to market failure in the provision of debt finance. The study showed that SMEs inability to provide information such as trading financial records and financial projections affect their applications for bank finance. The results also showed that younger SMEs were likely to encounter problems in accessing finance due to lack of financial records.Kasekende and Opondo (2003), Bruns and Fletcher (2008) also present similar findings as Deakins et al (2003). Kasekende and Opondo (2003) found that SMEs in Uganda fail to access finance due to lack of information such as detailed audited financial statements and financial projections of the firm.

Bruns and Fletcher (2008) point to the important role that financial information from financial statements play in SMEs access to bank credit. Lenders such as banks use financial statement information to assess the creditworthiness of firms and depending on the information rational financial decisions are made. Using past performance information obtained from financial statements, Bruns and Fletcher (2008) found that lending officer's probability of supporting credit increases with higher past financial performance of borrowing SMEs.

A report by S Fraser (2005) clearly indicates that financial information on the creditworthiness of borrowers is important to finance providers. Information on creditworthiness of borrowers can help finance providers with the decision of whether to supply funding or not. The report points that an absence of information restricts the supply of finance and this may hinder borrowers' access to finance. The Department for Business innovation and skills report, BIS (2012) also indicates that financial track records are important for borrowers to access funding. Lenders may require financial information to distinguish between high risk and low risk entrepreneurs. In order to avoid the cost incurred in gathering such financial information lenders often require borrowers to provide evidence of financial track record as security to access finance. Thus without financial information some borrowers may fail to access finance. (Mohini Malhotra et al (2006), Caneghem and Campenhout (2010)).

Caneghem and Campenhout (2010) findings also support the view that lack of information and low quality of information hinder the use of external finance by SMEs. Caneghem and Campenhout (2010) examined the impact of quality and quantity of publicly available information on SMEs financial structure. They found that information quality and quantity were positively related to SMEs financing structure.

Mohini Malhotra et al (2006) point that SMEs inconsistent financial statements and audits result in higher cost of processing the loans as the lender has to incur the cost of gathering financial information and this constrain making SMEs to access finance.

Apart from firm size and availability of financial information researchers investigating the financing behavior of SMEs have also found firm characteristics such as age, the industry in which the firm operates and firm growth as determinants of SMEs external financing. (Beck et al (2008), Michaelas et al (1999) ,Hall eta al (2000) ,Hutchinson (2003) Lopez and Ayabar (2002), Kai Li et al (2009), Abor and Biekpe (2009)).

Firms that are younger have no reputation and no established credit history that providers of external finance can use to evaluate their credit worthiness; as such they are more constrained in the use of external financing. On the other hand, older firms have a well established credit history and have built a good reputation with providers of external finance, as such are less constrained in the use of external finance. The reputation and the credit history which older firms establish over the years in doing business reduce the problem of information asymmetry and help the firms to easily access external financing (Frazer (2005), Petersen and Rajan (1994), Abor and Biekpe

(2009), Diamond (1989), Beck et al (2008), Maurizio et al (2009)).

The industry in which SMEs operates also influences the use of external financing. Some firms operate in high growth industries while others operate in low growth industries, as such their financial needs may also differ. Firms operating in high growth industries have greater demand for external financing than firms in low growth industries. (Michaelas et al (1999), Lopez-Garcia & Aybar-arias (2000), Hall et al (2000), Maurizio et al (2009)). Firms operating in high capital intensive industries such as manufacturing have more needs for external finance than firms operating in low capital intensive industries such as services**.** Beck et al (2008) found that there are differences in the use of external finance among firms in different industries. They found that firms in the manufacturing industries use more external finance than firms in the services industries.

The aim of this study is to analyze SMEs external financing use in Malawi, specifically the study analyzes whether availability of financial information, firm size, the industry in which firms operates, firm age and firm growth significantly determine use of external financing or not. We also analyze whether there are differences in the use of external financing between firms of different sizes and industries or not.

This study is unique in that the relationship between availability of financial information and SMEs use of external financing is examined. It is also the first study in Malawi to analyze SMEs external financing use. The study also takes into consideration the dependent variable external financing which is given as a proportion and appropriate regression method for modeling the fractional dependent variable is used.

The rest of the paper is structured as follows the next section presents the methods which include: the description of the fractional regression, data source, variables and summary statistics. Section 3 presents the results and section 4 gives the concluding remarks.

2. Method

2.1 Fractional Logit Regression Model

The regression model for fractional response variables was originally proposed by Papke and Wooldridge (1996).The fractional regression model considers a response variable which is defined on the unit interval. A fractional response variable which is bounded between zero and one cannot be modeled using linear models because linear models do not ensure that the predicted values will lie within the unit interval (Ramalho et al 2011).

Suppose that Y is a fractional response variable, $0 \le \mathrm{Y}_i \le 1$, X_i is a vector of explanatory variables and $i = 1,2,3.....N$ is the sample size .Then the fractional response variable Y can be modeled as

$$E(\mathrm{Y}_i \mid \mathrm{X}_i) = G(\mathrm{X}_i\beta) \tag{1}$$

Where $G(.)$ satisfy $0 < G(Z) < 1$ for all real numbers. This as suggested by Papke and Wooldridge (1996) ensure that the predicted values lies within the unit interval. If $G(.)$ is a logistic function equation (1) become

$$E(\mathrm{Y}_i \mid \mathrm{X}_i) = G(\mathrm{X}_i\beta) = \frac{\exp[\mathrm{X}_i\beta]}{[1+\exp(\mathrm{X}_i\beta)]} \tag{2}$$

The population equation (2) is estimated using a quasi-maximum likelihood estimation procedure by maximizing the Bernoulli log-likelihood function. The Bernoulli log likelihood function is given by

$$l_i(\beta) = \mathrm{Y}_i \log[G(\mathrm{X}_i\beta)] + (1-\mathrm{Y}_i)\log[1-G(\mathrm{X}_i\beta)] \tag{3}$$

If equation (1) is correctly specified the estimator $\hat{\beta}$ is consistent and asymptotically normal and is obtained by maximizing equation (3) i.e. $\max_\beta \sum_{i=1}^{N} l_i(\beta)$ .The fractional logit regression method has been chosen because the dependent variable is given as a fraction and an appropriate regression method to use when the dependent variable is a fraction is the fractional regression method. The advantage of using the fractional regression method over other methods when the dependent variable is a fraction that lies within the unit interval is that it ensures that the predicted values will also lie within the unit interval.

2.2 Data Source, Variables and Summary Statistics

Firm level data from the World Bank Enterprise Survey (2009) is used in this study. Overall, 150 small, medium and large enterprises were surveyed in Malawi. Enterprise surveys by the World Bank are firm level surveys of a representative sample of firms in the non-agricultural formal private sector of the economy (Note 1). The surveys collect information on firm characteristics such as firm size, ownership structure, age of the firm, industry or sector in which the firm operates .The surveys also collect information on the financing sources used by firms which includes internal as well as external financial sources such as banks, nonbanking financial

institutions, supplier credits and other (money lenders, friends, relatives). These financing sources used by firms are given in terms of proportion.

The dependent variable in this study is the proportion of the firm's working capital that was financed through external source of finance. The external source of finance is the total proportion of the firm's working capital that was financed through bank, nonbanking financial institutions, supplier credits and others (money lenders, friends and relatives).

The independent variables are: firm size which is included as a dummy variable of small, medium and large firms. This dummy variable takes the values of 1, 2 and 3 for small, medium and large firms respectively. The industry in which the firm operates is included as a dummy variable which take the value of 1 for firms operating in the manufacturing industries and 2 for firms operating in the services industries. Age of a firm is defined as the number of years since a firm began its operations to the year of the survey. The total annual increase in sales of the establishment in the last three fiscal years is used as a proxy for firm growth. The variable availability of information is a dummy variable. Availability of information was measured by one question in the questionnaire which asked the firms as to whether they have financial statements audited by an external auditor or not. This variable takes the value of 1 for firms that have their annual statements audited by an external auditor and 0 otherwise. Thus having detailed financial statements audited by an external auditor is used as a proxy for availability of information. Table 1 presents a summary of the dependent variable and all the independent variables.

Table 1. A summary of the dependent and independents variables

Variable	Definition
External finance	Proportion of the firms' working capital financed through external sources.
Firm size	A dummy equal to 1, 2, 3 for small, medium and large (reference category) firms respectively.
Firm age	Number of years since a firm began its operations to the year of the survey.
Firm growth	Total annual increase in sales of the firm in the last three fiscal years is used as a proxy for growth.
Availability of information	A dummy equal to 1 if a firm has its annual financial statements audited by an external auditor and zero otherwise.
Industry	A dummy equal to 1 and 2 for firms in the manufacturing and services (reference category) industries respectively.

Since the dependent variable is a fraction, the fraction logit regression method described in section 2.1 is employed to investigate whether the independent variables significantly determine the use of external financing or not. The Wald F-statistic is employed to investigate whether there are significant differences in the use of external financing between firms of different sizes and industries or not.

Table 2 gives the summary statistics for the sample of the SMEs surveyed in Malawi. The proportion of external financing attained by SMEs is very low, averaging only 22.5%, while 76.6% represents the proportion of internal financing attained by SMEs. For the independent variables: age of firms averages 14.3 and total annual increase in sales of the firms (sales growth) which is used as a proxy for firm growth averages 7392.8 (Malawi kwacha). The variables size, industry and availability of information are indicator variables.

Small enterprises make up 66.5% of the sample, medium enterprises 23.7% and large enterprises 9.8% of the sample. Thus a large proportion of the enterprises which were sampled are small and medium. For the variable availability of information which indicates whether a firm has its annual financial statements audited by an external auditor or not, 50.5% of the sample comprises firms with annual financial statements audited by an external auditor. Most of the firms in the sample operate in the services industries which make up 73.1% and the remaining 26.9% operate in the manufacturing industries.

Table 2. Variables summary statistics (number of observations =150)

Variable	Mean	Standard Deviation	Maximum
External finance	0.22546	0 .3329	1
Age	14.2616	11.822	89
Growth	7392.78	9237.51	33039.69
Size			
Small	0.6653	0 .4734	1
Medium	0 .2369	0 .4266	1
Large	0 .0977	0.2978	1
Industry			
Manufacturing	0 .2691	0 .4449	1
Services	0 .7309	0 .4449	1
Availability of information	0.5052	0.5016	1

3. Results

We begin the analysis of SMEs use of external financing by investigating whether there are significant differences in the use of external financing across firm size and industry or not. We investigate this by testing whether the mean of external financing use between firms of different sizes and industries are statistically equivalent by using the Wald –F test.

Table 3 gives the mean of external financing of the firms by size, industry in which the firms operates and the adjusted Wald F-statistic. Clearly, the means are different across firm size. A test of whether the mean of external financing between small and medium firms are statistically equivalent show that the means are significantly different at 5% significance level. Similarly a test of whether the mean of external financing between medium and large firms are statistically equivalent show that the means of external financing are equivalent .An analysis of whether the mean of external financing between small and large firms are statistically equivalent also show that the means are significantly different. It is clear from the analysis that there are differences in the use of external financing by small, medium and large firms, indicating that size might be a determining factor in the use of external financing which may call for policies that take into account firm size, an example of such a policy is special financing scheme for firms of different sizes. This is investigated further in section (3.1) to establish whether firm size is an important determinant of external financing use.

An analysis of whether the mean of external financing between firms in the manufacturing and services industries are statistically equivalent indicates that, the mean of external financing is statistically significantly different. Firms in the manufacturing industry use 16% more external financing than firms in the services industry.

Table 3. Mean external financing across firm size and industry

Variable	Mean	Adjusted Wald statistic (P-value)
Size		
Small (5 to 19)	0 .1666	[a] 4.46(0.0364)**
Medium (20 to 99)	0 .3266	
Large (100 or more)	0 .3806	[b] 0.47(0.4931)
Industry		
Manufacturing	0.3415	5.61(0.0191)**
Services	0.1827	

***, **,* Significant at 1%, 5% and 10% respectively.

Notes: a indicates small –medium comparison; b indicates medium-large comparison. Small- large Comparison: 6.22 (0.0138).

3.1 Model Estimation

Next we estimate the fractional logit model using the quasi maximum likelihood method as described in section (2) to investigate whether firm size, sector in which the firm operates and the other firms' characteristics

presented in table 1 significantly determine external financing use or not. The following logit model is estimated:

$$E(Externalfinance \mid X) = \beta_1 + \beta_2 Age + \beta_3 Growth + \beta_4 Availabilityof\ \inf ormation + \beta_5 Small + \beta_6 Medium + \beta_7 Manuf) \quad (4)$$

Table 4 gives the results of the fractional logit regression estimation. The results show that availability of information is positively significant at 5%, indicating that availability of information significantly determines use of external financing .This is because firms with audited annual financial statements reduce the problem of information asymmetry by making financial information about their businesses available to providers of external finance .With the availability of information providers of external finance are able to distinguish between high quality and low quality projects at lower costs, thereby reducing the cost of lending. As argued by Berger and Udell (1998) low cost of lending encourages use of external financing.

The results also reveal that there is a positive significant relationship between firm growth and use of external financing (p-value =0.001).Firms with high growth put demand on internal funds as argued by Cassar and Holmes (2004) as such those firms turn to external financing to sustain their growth. Similarly Lean and Tucker (2001) also found that increased sales growth is significantly associated with the use of external financing.

Beck et al (2008) results also confirm this finding. The authors found that firm growth is significantly related to the use of external financing, especially bank financing.

The age variable is negatively related to the use of external financing. Although the relationship is insignificant, it indicates that external financing use decreases with firm age. This is because over the years older firms may have increased in profitability and accumulated retained earnings thus use these earnings to finance their operations. This may not be the case with younger firms.

The results for size of the firm reveal that there is a negative significant relationship between small firms and the use of external financing, while for medium firms the results reveal a positive significant relationship between medium firms and the use of external financing. This indicates that small firms use less external financing compared to medium firms**.** Small firms face information asymmetry problems as such they have difficulties in accessing external financing compared to medium and large firms. Beck et al (2008) also found that small firms use less external financing compared to medium firms. However they found a negative significant relationship between small, medium firms and the use of external financing .For the variable industry, the results of the study show that there is no significant relationship between firms operating in the manufacturing industries and the use of external financing.

Table 4. Fractional regression results with proportion of external financing as the dependent variable

Variable	Marginal effects	Standard errors	P-values
Age	-0.0003923	0.00198	0.843
Growth	0.000045	0 .00000	0.001***
Size			
Small	-0.1201	0 .0343	0.000***
Medium	0 .16445	0 .0405	0.0215**
Industry			
Manufacturing	0.0529	0.05762	0.359
Availability of information	0.1882	0 .0777	0.015**
Observations	150	150	150

***, **,* Significant at 1%, 5% and 10% respectively.

Note: marginal effects are calculated at mean, for dummy variable size, large is the reference category while for industry, services is the reference category.

4. Conclusions

The study investigated the use of external financing by small, medium and large firms in Malawi. Specifically, we investigated whether there are differences in the use of external financing between firms of different sizes and industries or not. We also investigated whether firm size, the industry in which the firm operates; firm growth, firm age and availability of financial information significantly determine use of external financing in Malawi.

The results indicate that, there are significant differences in the use of external financing between small and medium firms. Small firms use less external financing compared to medium firms and further analysis indicates that firm size is important in determining external financing use. Small firms use less external financing because of information asymmetry problems which translates into high costs of lending, making it difficult for small firms to access external finance. Informational opacity in small firms also results into adverse selection and moral hazard problems which make it difficult for small firms to access external financing. Adverse selection problems can lead to credit rationing which in turn constrain small firm's access to financing even if they have high quality projects. On the other hand moral hazard problems can force providers of external finance to demand collateral from small firms and this will constrain small firm's access to finance as they usually do not have a lot of assets to post as collateral.

The results also reveal that, there are differences in the use of external financing between firms in the manufacturing and services industries. Firms in the manufacturing industries use 16% more external financing than firms in the services industries. However, the industry in which the firm operates is not important in determining use of external financing.

Age of the firm has a negative insignificant relationship with use of external financing, indicating that firm age is not important in determining external financing in Malawi. Firm growth has a positive significant relationship with use of external financing. This is as expected since growing firms are likely to seek external financing in order to sustain or finance their growth.

The study also reveals that availability of financial information (firms that have their annual financial statements audited by external auditors) is important in determining use of external financing. This is because SMEs with annual financial statements audited by external auditors reduce the problem of information asymmetry by making financial information available to providers of external finance. By making financial information readily available small firms are able to prove the quality of their projects. At the same time providers of external finance have access to information at lower costs. This reduces lending costs and encourages SMEs use of external financing.

The results of this study have the following policy implication: small firms that have difficulties in accessing external financing should be identified and policy interventions that target the identified small firms such as special financing schemes should be introduced to help small firms easily access external financing. Policy makers need to implement policies directed at encouraging small firms to have audited annual financial statements so as to reduce information asymmetry problems faced by such firms. This can be implemented together with the first intervention by supporting the targeted small firms through training on the importance of having detailed financial records and training them so that they can acquire proper financial management skills.

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Note

Note 1. www.enterprisesurveys.org