Effect of Credit Scoring Practices on Access to Credit by SME's in Nakuru County, Kenya

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Abstract: *There exist many barriers to Small and Medium Enterprises (SMEs) access to credit, which equally has hampered their growth. SMEs are generally perceived as risky business and in most cases fail to pass the credit scoring evaluation. Given the unique nature of SMEs, application of credit scoring might have adverse effects on credit evaluation. Thus, this study aimed to determine the effect of credit scoring practices - namely firm characteristic requirements, firm condition requirements, firm capacity requirements and firm collateral requirements - on credit access by SME's in Nakuru County, Kenya. A correlational research designed was adopted. Findings for construct correlation with access to credit by SMEs in Nakuru County, Kenya revealed a strong positive and significant correlation r=0.604 (p=0.001) for firm characteristics; r=0.764 (p=0.001) for firm condition; r=0.733 (p=0.001) for firm capacity; and r=0.515 (p=0.038) for firm collateral. Further finding shown credit scoring practices significantly affects accessibility of credit by SMEs, with the most credit practice being firm condition (β=0.465), followed by firm capacity (β =0.399), and finally firm characteristics (β =0.308) collateral (β =0.142).*

I. Introduction

Awarding credit to firms, including Small and Medium Enterprises (SMEs), is a management process which is based on a methodology process. The methodology starts from the application for credit and ends at the time the loan from the credit process is fully paid. According to Wepukhulu (2010) the credit management process has smooth paths, impediments and detours, which depends on the credit scoring rating of an individual applicant. Credit scoring is a statistical method used to predict the probability that a loan applicant or existing borrower will default or become delinquent (Nosratabadi, Pourdarab & Nadali (2011). Credit scoring has been widely used for consumer lending, especially credit cards, however of late, the practice has gain momentum use in mortgage and business lending.

One reason for the delay is that business loans typically differ substantially across borrowers (Yahie, 2000), making it harder to develop an accurate method of scoring. But the advent of new methodologies, enhanced computer power, and increased data availability have helped to make such scoring possible and many banks are beginning to use scoring to evaluate business loans, including SMEs loan applications. McIntyre and Dallago (2003) pointed that, credit scoring tries to isolate the effects of various applicant characteristics on delinquencies and defaults using historical data and statistical techniques.

Small and medium enterprises are an important force for economic development and industrialization in poor countries (McIntyre & Dallago, 2003), and substantially contributes to job creation, economic growth and poverty alleviation. In fact, the World Bank Development Report suggests that creating "sustainable jobs and opportunities for micro entrepreneurs are the key pathways out of poverty for poor people" (World Bank, 2008). However in the contrary, lack of access to credit is as a key problem for SMEs worldwide due to credit constraints, which operate in variety of ways (Yoshino, 2013; Yoshino and Taghizadeh 2015). SMEs enterprise-level data collected by the World Bank on funding of SMEs by commercial banks; Latin America and Caribbean shown that only 39%; Sub-Saharan Africa 20%.

In Kenya, there are about 7.5 million SMEs, of which 88% are non-registered (KNBS, 2017). Only 23% have bank accounts of which 10% have ever received credit from any formal source (Njeru, Namusonge & Kihoro, 2012). In addition, total of 2.2 million SMEs were closed in the last five years, with 46% of startup SMEs died in their first year of establishment due to shortage of operating funds (KNBS, 2017; Atieno, 2009; Bigsten et al, 2003; ILO, 2008; Sacerdoti, 2005). This could be attributed to challenges in assessing the risk in

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loan applications, created by credit scoring policy, which portrays them as risky borrowers Atieno, 2009; Bigsten et al, 2003; ILO, 2008; Sacerdoti, 2005). Scholars have studied SMEs credit access challenges and there appear to be a consensus regarding the perceived risk in lending SMEs. From the existing studies, it is evident that methodology of accessing SMEs viability for funding could be the problem. There was a need to review current credit scoring practices which the study did - and developed an appropriate tailored scorecards (firm characteristic, firm condition, firm capacity, and collateral) for SMEs.

Purpose and the hypothesis of the study
The purpose of the study was to establish the effect of credit scoring practices on access to credit by SME's in Nakuru County, Kenya. The null hypothesis to test for this effect were:
H_1: Firm characteristic requirements does not significantly affects credit access by SME's in Nakuru County, Kenya.
H_2: Firm condition requirements does not significantly affects credit access by SME's in Nakuru County, Kenya.
H_3: Firm capacity requirements does not significantly affects credit access by SME's in Nakuru County, Kenya.
H_4: Firm collateral requirements does not significantly affects credit access by SME's in Nakuru County, Kenya.

II. Literature Review

Theoretical Review

The study was grounded on the Liquidity Theory of Credit. This theory, first suggested by Emery (1984), proposes that credit rationed firms use more trade credit than those with normal access to financial institutions. The central point of this idea is that when a firm is financially constrained, the offer of trade credit can make up for the reduction of the credit offer from financial institutions. In accordance with this view, those firms presenting good liquidity or better access to capital markets can finance those that are credit rationed. Several approaches have tried to obtain empirical evidence in order to support this assumption. For example, Nielsen (2002), using small firms as a proxy for credit rationed firms, finds that when there is a monetary contraction, small firms react by increasing the amount of trade credit accepted. As financially unconstrained firms are less likely to demand trade credit and more prone to offer it, a negative relation between a buyer's access to other sources of financing and trade credit use is expected. Petersen and Rajan (1997) obtained evidence supporting this negative relation.

Variables Constructs Review
Firm's Characteristics

SMEs share some common characteristics that differentiate their credit accessibility from large firms. The first and most frequently cited characteristic is firm size (which is often indicated by number of employees or sales). SMEs are characterized as the "missing middle" because on one hand, for banks, the amount lend to SMEs is too small to offset transaction and screening cost (Shinozaki, 2012). On the other hand, the loan might be too large for the borrowers to borrow from microfinance institutions (Dalberg, 2011). Hernández-Canovas and Martinez-Solano (2010)'s study reported that small sized enterprises bear higher cost of debt than medium sized enterprises because asymmetric information is reduced when the firms become larger. Drakos & Giannakopoulos (2011) argued that firm size can signal loan repayment ability; therefore, small firms are more likely to be credit rationed.

Firm's Condition

Condition is the external economic, market, social and environmental conditions under which borrowers do business. Some thoughts must be given to the nature and prospects of the business of the borrower with particular reference to the prevailing economic conditions. The natural optimism of every potential borrower has to be discounted and the real prospects of the venture addressed in light of known conditions; allied to this enquiry is the desirability of the advance (MacDonald et al, 2006). Here the field is limited to the possibility of success or otherwise of the venture for which finance is sought from the bank. With the experience or otherwise of the borrower, is the project likely to succeed? If it fails, the bank is likely to fall back on its security to recover its advances and the lending will fundamentally be adversely affected. If it succeeds, will the development problems be overcome? Would anyone contently lend to a factor to market ice cream to Eskimos or woolen vests to equatorial natives (Matter, 1972).

Between the extremes there is much to be considered by the banker in any proposal for accommodation required by a customer. It should be noted that there are no tram lines demanding a prescribed course. It is only a question of considering the business and its prospects in conjunction with all other factors and as it were a vote for or against the proposal (MacDonald et al, 2006).

Firm's Capacity

This is measured using information related to income/stability in relation to loan repayments. The bank will always be interested in knowing exactly how the customer intends to repay the loan. Under this circumstance the banks analysts accounting, legal and finance skills are crucial in determining the ability of the SME to repay the loan from the cash flows generated by the business. For a seasonal working capital loans, cash flows are generated by means of orderly liquidation of built up of inventories and receivables. For term loans, cash flows are generated from earnings and non-cash expenses such as depreciation and depletion charged against earnings (MacDonald et al, 2006). In addition, under this credit scoring determinant the banks further determine the timing and sufficiency of the cash flows and evaluate the risk of the cash flows falling short.

Firm's Collateral

Collateral refers to the extent to which assets are committed by borrowers to a lender as security for debt payment (Gitman, 2003). The security assets should be used to recover the principal in case of default. SMEs in particular provide security in form of properties (houses, the businesses, the car, and anything that could actually bring back the principal) in case of default on loans (Garrett, 2009). Security for loans must actually be capable of being sold under the normal conditions of the market, at a fair market value and also with reasonable promptness. However, in most banks, in order to finance SMEs and to accept loan proposals, the collateral must be 100% or more, equal to the amount of credit extension or finance product (Mullei & Bokea, 2000). According to a survey done by Kamau (2009), found that collateral security is a major constraint to credit access. In addition, 92% of enterprises studied had applied for loans, and were rejected while others had decided not to apply since they knew they would not be granted for lack of collateral security. McMahon (2005) stats that other factors held constant, firms with more intangible assets need to borrow less compared to firms with more tangible assets because of collateral factor. SMEs have fewer collateral and sable assets than large firms. Banks have always adopted a risk adverse attitude towards small firms, with an accompanying inability to focus on the income generating potential of the venture, when analyzing the likelihood of loan repayment (Beaver, 2002).

Access to Credit by SMEs

Access to Credit by SMEs refers to the ease with which SMEs can secure financial assistance or loans from lending institutions (Kitili, 2012). SMEs' access to external sources of funding depends largely on the development of financial markets, the regulatory environment within which financial institutions operate and their ability to assess, manage and price the risks associated with loan products for SMEs. The latter functions take place within a particular socio-economic context, which is in fact determined by the historical patterns of financial intermediation (Braverman & Guasch, 1990). Accessibility to credit is significant for SME's seeking to grow and expand their businesses Bank credit usually comes in the form of a small business loan. Businesses often use these lines of credit to expand, explore new areas of their industry, acquire another company, or pay employees. These are essential to the overall success of a business. Lack of access to credit is indicated as a key problem for SMEs worldwide countries (Vera & Onji, 2010). Access to Credit by SME's is, therefore, vital for the growth and development of SMEs. The availability of external finance directly impacts the productivity and growth of this industry (World Bank 2012). It is a well-recognized all over the world that banks are the main external capital provider for SMEs sector in both developed and developing countries (Vera & Onji, 2010).

Empirical Review

Copious research have been conducted on performance of SMEs across the globe. According to a research done by Berger and Udell (2002) on small business credit availability and relationship lending: the importance of bank organizational structure found that smaller and younger firms are more likely to face higher cost of financing and at the same time they are required to offer collateral. Smaller firms have fewer assets to offer as collateral. In order to reduce the anticipated risk and moral hazard associated with lending, the banks use collateral as one of the instrument.

The study conducted by Klapper (2010) discovered that, the firms with less than 5 years (younger firms) in operation are less likely to rely on debt financing from lenders. Ngoc, Le and Nguyen (2009) supported the argument that younger firms face hardship and more costs in accessing external financing from lenders because information asymmetry. Consequently, it is hypothetical existence of a positive relationship between firm's age and access to debt finance by SMEs. Previous researches (Bopkin 2010, and Prosser 2012) show that developed economies have favorable economic, market, technological conditions as compared to developing and emerging economies whose conditions are fragile. It is therefore more likely to have favorable loans decisions for SMEs in developed economies as compared to developing or emerging economies.

Bougheas, Mizen, and Yalcin, (2006) pointed out that the requirement of collateral is a crucial aspect for SMEs to succeed in accessibility of external financing from lenders. Coco (2000) suggested that the collateral is the lender's protection incase default happened by a borrower, in that perspective collateral is the insurance that lender's contract will be honored and respected. Collateral solves the information asymmetry problems in the evaluation of investment project, the worthiness of the project and risk that might be involved by a borrower as well as the cost related to supervision of borrower's characters. Barbosa and Moraes, (2004) and Fatoki and Asah, (2011) suggested that operators of SMEs have to own more tangible assets that can create higher value on their firm to accelerate borrowing security because, the higher the value of assets the lower the interest rates of the debt to be secured by those assets.

World Bank (2008) study on the policies and pitfalls in expanding access to Finance argues that the key impediment to the growth of the small enterprises sector which is a scarcity of both credit and equity funding. Being able to get loans has been identified as a main element for small enterprises to prosper in their struggle to grow, be competitive, create employment and to participate in growth of the gross domestic product in developing economies. Diagne and Zeller (2001) argue that insufficient access to credit by the poor just below or just above the poverty line may have negative consequences for SMEs and overall welfare. Access to credit further increases SMEs risk-bearing abilities; improve risk-copying strategies and enables consumption smoothing overtime. Schiffer and Weder (2001) show that SMEs find accessing finance more difficult than larger firms. They rank all the obstacles firms face in doing business and find that financing is a top problem for SMEs, which rate is higher than larger firms.

III. Materials & Methods

This study adopted a correlational research design, which is a type of non-experimental research which measures two variables and assesses the statistical relationship (i.e., the correlation) between them with little or no effort to control extraneous variables (Mugenda & Mugenda, 2013). The design allowed the study to estimate the effects of constructs of credit scoring practices on credit access by SMEs in Nakuru County, Kenya. The target population were registered SMEs within the CBD of Nakuru Town in Nakuru County, Kenya; sample size of 340 estimated using Slovin's sample size formula (Solvin, 1960), which is a statistical tool used to determine a sample size from a finite population taken for a specific study (Orotho and Kombo, 2002). The study used both stratified sampling and simple random sampling methods to group the population into stratums according to business type and select respondent from each stratum respectively. Inferential statistics analysis: namely Pearson correlation and multiple regression, was employed to interpret the relationship between the independent variables constructs (credit scoring practices) and the dependent variable (credit accessibility by SMEs). Analysis of Variance (ANOVA) was computed to test for model fit for the study and significant of beta values was tested using t-test parametric test at 95% level of confidence and hypothesis evaluated by p values of t test statistics.

Model Construction.
The model for assessing the credit scoring practices construct effect on accessibility of credit by SMEs is provided below.

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$
Where: Y = the dependent variable (Access to credit by SME's)
β_0 = Constant Term
X_1 = Firm's Characteristic
X_2 = Firm condition requirements
X_3 = Firm capacity requirements
X_4 = Firm collateral requirements
$\beta_1, \beta_2, \beta_3$ and β_4 = Constructs regression beta coefficients
ε = error term

IV. Analysis And Result

Regression analysis results for coefficient of determinant is shown in Table 1. Finding revealed R^2 of 0.6082, which implies 60.82% of variation in accessibility of bank credit by SMEs is attributed firm characteristics requirement, firm condition requirements, firm capacity requirements and firm collateral requirements of credit scoring factors.

Table 1: Model Summary

Model	R	R Square[a]	Adjusted R Square	Std. Error of the Estimate
1	0.7799a	0.6082	0.5951	0.3651

a. Predictors: (constant), firm characteristics, firm condition, firm capacity and firm collateral.

Analysis of Variance (ANOVA) result is depicted in Table 2.

Table 2: ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	134.867	4	16.707	5.641	.000[b]
	Residual	37.236	229	.647		
	Total	**172.103**	**233**			

a. Predictors: (constant), firm characteristics, firm condition, firm capacity, firm collateral
b. Dependent variable: accessibility of bank credit

Table 2 result indicate a higher calculated F-statistics of 5.641 > F critical =3.933 and significance (p=0.000<0.05) at 95% level of significance. The result reveals revealed that the mode constructs (firm characteristics, firm condition, firm capacity and firm collateral) are good predictors of credit scoring influence. Thus, the adopted model was fit for the study. Beta coefficients obtained from multiple regression analysis results are shown in table 3.

Table 3: Coefficient Analysis

Coefficients[a] Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	2.374	0.192		1.510	0.000
Firm characteristics	0.308	0.172	0.504	2.014	0.002
Firm condition	0.465	0.195	0.476	2.305	0.002
Firm capacity	0.399	0.078	0.524	2.013	0.002
Firm collateral	0.142	0.039	0.595	1.605	0.083

a. Predictors: (constant), firm characteristics, firm condition, firm capacity, firm collateral
b. Dependent variable: accessibility of bank credit

From Table 3, finding shows a constant value 2.374 which represents the change in credit accessibility when the change in firm characteristics, condition, capacity and collateral is zero. Further finding reveals that unit change in firm characteristics would cause 0.308 factor change in accessibility of bank credit by SMEs; unit change in firm condition would cause 0.465 factor change in accessibility of bank credit by SMEs; unit change in firm capacity causes 0.399 factor change in accessibility of bank credit by SMEs, and unit change in firm collateral would cause 0.142 factor change in accessibility of bank credit by SMEs. All the factor change, except firm collateral, were significance at 95% level of significance. The multiple regression finding revels the most credit scoring factor practice that affects accessibility of credit by SMEs is firm condition requirements, followed by firm capacity, firm condition and finally firm characteristics. These findings yield an optimal regression model construct shown below:

SMEs Credit Accessibility (Y) = 2.374 + 0.465 Firm Condition Requirements (X_1) + 0.399 Firm Capacity Requirements (X_2) + 0.308 Firm Characteristics Requirements + 0.142 Firm Collateral Requirements.

V. Discussion

The purpose of the study was to determine the effect of credit scoring practices on access to credit by SME's in Nakuru County, Kenya. Four constructs of credit scoring namely firm condition requirements, firm capacity requirements, firm characteristics requirements and firm collateral requirements were assessed. Multiple regression analysis results indicated firm characteristics requirement yielded beta value β=0.308 (with t-cal=2.014 > t-crit=1.96, p=0.002<p=0.05). Thus the first null hypothesis which stated "firm characteristic requirements does not significantly affects credit access by SME's in Nakuru County, Kenya" is hereby rejected as there existed a significance change of 0.308 on credit access by SMEs following unit change in firm characteristics. This finding is in agreement with results for Berger and Udell (2002) and Klapper (2010) all reported significance influence of firm characteristics, however on the contrary, Ngoc, Le and Nguyen (2009) reported insignificance effects.

Results for firm condition requirement revealed beta value β=0.465 (with t-cal=2.305 > t-crit=1.96, p=0.032<p=0.05). The second null hypothesis which stated "firm condition requirements does not significantly affects credit access by SME's in Nakuru County, Kenya" is hereby rejected as there existed a significance change of 0.465 on credit access by SMEs following unit change in firm capacity. This finding is corroborated by Bopkin (2010), Prosser (2012), Diagne and Zeller (2001), Barbosa and Moraes (2004), Fatoki and Asah (2011), and Bougheas, Mizen, and Yalcin (2006).

Similar results were recorded for firm capacity requirement which revealed beta value β=0.399 (with t-cal=2.013 > t-crit=1.96, p=0.002<p=0.05). equally, the third null hypothesis which stated "firm capacity requirements does not significantly affects credit access by SME's in Nakuru County, Kenya" is hereby rejected as there existed a significance change of 0.399 on credit access by SMEs following unit change in firm capacity requirement. Empirical studies which supported this findings were Bopkin (2010), Prosser (2012), Diagne and Zeller (2001), Barbosa and Moraes (2004), Fatoki and Asah (2011), and Bougheas, Mizen, and Yalcin (2006), while Ngoc, Le and Nguyen (2009) reported insignificance effects too.

Last construct regression finding result for firm collateral requirements revealed β=0.142 (with t-cal=1.605 < t-crit=1.96, p=1.605>p=0.05). The forth null hypothesis which stated "firm collateral requirements does not significantly affects credit access by SME's in Nakuru County, Kenya" is accepted as the change of 0.142 on credit access by SMEs resulting unit change in firm collateral requirement was insignificance. This finding negates majority of findings (Bopkin, 2010; Prosser, 2012; Diagne and Zeller, 2001; Barbosa and Moraes, 2004; Fatoki and Asah, 2011; and Bougheas, Mizen, and Yalcin, 2006) which reported significance effect, except findings by Ngoc, Le and Nguyen (2009) which corroborated with it.

VI. Conclusion

Based on the result and findings, the study concludes that credit scoring practices effects SMEs ability to access credit facilities from commercial banks. Specifically firm characteristic requirements significantly affect accessibility of credit by SMEs; firm condition requirements and firm capacity requirements also significantly affects accessibility of credit by SMEs in Nakuru County, Kenya.

VII. Recommendation

Based on the significance effect of the requirement, and use of firm characteristic requirements, firm capacity requirements and firm condition requirements in evaluating SMEs credit application, the study recommends that financial institution management should review current application of credit scoring practices for SMEs. In particular, asset base value, security, guarantors, should be reconsidered as they present the highest threat to accessibility of commercial banks credit by SMEs.

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