The Relationship between Credit Scoring Practices by Commercial Banks and Access to Credit by Small and Medium Enterprises in Kenya

Josiah Aduda
Senior Lecturer & Chairman
Department of Finance and Accounting
University of Nairobi
Nairobi, Kenya

Peterson O. Magutu
Lecturer
Department of Management Science
University of Nairobi
Nairobi, Kenya

Githinji Mary Wangu
MBA Student
Department of Finance and Accounting
University of Nairobi
Nairobi, Kenya

Abstract

Banks that have adopted credit scoring have realized significant increases in the importance of small business and micro business loans in the total lending portfolio subsequent to the use of credit scoring in the lending decision. The objective of this study was to establish the relationship between credit scoring by Kenyan banks and access to credit by SMEs in Kenya. This was an explanatory study where the research sought to establish a relationship between the use of credit scoring and access to credit for SME loans by Kenyan banks. A census survey was conducted involving all 43 Commercial Banks in Kenya registered and licensed under the banking act as at 31st December 2009 as per the Central Bank of Kenya. This study used primary data that was collected from the respondents of the survey. Data was captured and analyzed using Statistical Package for the Social Sciences (SPSS) version 17. Regression analysis was used to determine the relationship between credit scoring and approval rates for SME's. The study concludes that there is a relationship between credit scoring by Kenyan banks and access to credit by SMEs in Kenya. The benefits gained from the use of credit scoring include accuracy in the decision making process. This accuracy is gained to the reduction of adverse selection cases where better assessments are made in regards to an application therefore providing better decision making. The study recommends that banks need to use various credit assessment methods before availing loans to SME applicants. This in turn improves the credit scoring of banks. In addition, the banks need to regularly review their credit policies.

Key words: Credit Scoring, Practices, Access to Credit, Commercial Banks & Small and Medium Enterprises, Kenya.

Introduction

The concept of credit is one that existed and was in use almost as long as there has been civilization. It predates, by a considerable length of time the use of money, and written references to it appear as far back as in the code of Hammurabi, established around 1750 B.C. From its beginnings, credit has been used as a selling tool, to bind customers to a particular vendor and allow them to acquire more substantial goods for which they do not have the necessary capital (Mandell, 1994). The power theory of credit emphasizes that financial institutions would be more willing to extend credit if, in case of default, they could easily enforce contracts by forcing repayment or seizing collateral. The amount of credit in a country would then depend to some extent on the existence of legislation that protects the creditor rights on the quality procedures that lead to repayment.

When lenders can more easily force repayment, grab collateral, or even gain control of the firm, they are more willing to extend credit (Djankov et al, 2005).

Information theories of credit refer to the amount of credit to firms and individuals would be larger if financial institutions could better predict the probability of repayment by their potential customers. Therefore, more banks know about the credit history of prospective borrowers, the deeper credit markets would be. Public or private credit registries that collect and provide broad information to financial institutions on the repayment history of potential clients are crucial for deepening credit markets. The information that each party to a credit transaction brings to the exchange will have important implications for the nature of credit contracts; the ability of credit markets to match borrowers and lenders efficiently and the role played by the rate of interest in allocating credit among borrowers. The nature of credit markets can lead to distinct roles for different types of lenders and different types of borrowers (Walsh, 2003). When lenders know more about borrowers, their credit history, or other lenders to the firm, they are not as concerned about the “lemons” problem of financing non-viable projects, and therefore extend more credit (Stiglitz et al 1981).

Legal origin also has implications for financial developments. Beck et al (2004) identified a political and an adaptability channel through which legal origin affects credit markets. The political channel depends on the balance between state power and private property rights. For example, civil law that promotes institutions that favor state power over private property rights would tend to have adverse implications for the growth of credit markets. The adaptability channel recognizes that legal traditions differ in their ability to evolve efficiently because judges respond case by case to changing conditions. Both channels imply that countries whose law is French in origin should have on average slower financial development than British common law countries.

Risk is the possibility that the actual return on an investment will be different from the expected return on that investment. Credit risk has been defined as the distribution of financial losses due to unexpected changes in the credit quality of a counter party in a financial agreement. Madison (1974) posits that the oldest Mercantile Agency opened its doors in New York in 1841; it offered a new kind of service to businessmen. Earlier, in both Europe and America, businessmen seeking credit information had occasionally hired agents or organized in local associations to share information and protect themselves from credit losses. But the Mercantile Agency was the first organized effort to provide all who wished to subscribe to its service with detailed credit information about businessmen across a broad expanse of territory.

The credit granting process leads to a choice between two actions; to give the new applicant credit or to refuse. Credit scoring tries to assist this decision by finding what would have been the best rule to apply on a sample of previous applicants. This is the basis of credit scoring approach where a decision to accept or reject an application is made (Thomas et.al, 2002). It allows for case by case risk management assessment when appraising a loan application. It therefore refers to the use of statistical models to transform relevant data into numerical measures that guide credit decisions. It is therefore referred to as the industrialization of trust (Anderson, 2007). Credit scoring has been championed worldwide to be a better means of evaluating a creditworthy borrower as compared to the traditional methods of risk assessment. The development of technology over the years has seen many banks adopt credit scoring models as part of their evaluation of a creditworthy borrower. Steven (2006) posits that Credit scoring attempts to simplify the task of estimating the probability of default and calculate the loss given default from a range of complicated possible scenarios.

Small Business Credit Scoring (SBCS) is defined as a lending technology used by many financial institutions over the last decade to evaluate applicants. It is a statistical approach to predicting the probability that a credit applicant will default or become delinquent. SBCS involves analyzing consumer data about the owner of the firm and combining it with relatively limited data about the firm itself using statistical methods to predict future credit performance. Credit information for the principal owner explains a significant amount of the variation in the performance of small business credits (Berger et al, 2005).

The objective of quantitative credit scoring is to develop models that accurately distinguish good applicants (likely to repay), from bad applicants (likely to default). Nowadays, financial institutions see their loan portfolios expand and are actively investigating various alternatives to improve the accuracy of their credit scoring practice. Even an improvement in accuracy of a fraction of a per cent might translate into significant future savings (Baesens et al, 2003).

The role of Credit scoring in financial markets includes decreasing information asymmetries between borrowers and lenders. It also allows lenders to more accurately evaluate risks and improves portfolio quality. Finally, it eases adverse selection problem and lowers the cost of credit for a good borrower while increasing credit volume and improving access to credit. The term Small and Medium Enterprises (SME) covers a wide range of definitions and measures, varying from country to country. Some of the commonly used criteria are the number of employees, total net assets, sales and investment level. However, the most common definitional basis used is employment. Currently the SME Department of the World Bank works with the following definitions: Small Enterprises are defined to have up to 50 employees, with total assets and total sales of up to $3 million while Medium Enterprise is one that has up to 300 employees, having total assets and total sales of up to $ 15 million per annum (Ayyagari et al, 2003). Therefore SMEs are companies that have up to 300 employees and total assets and sales of up to $ 15 Million.

Lack of access to credit is indicated as a key problem for SMEs worldwide. In some cases, even where credit is available, the entrepreneur may have difficulties because the lending conditions may require collateral for the loan. Credit constraints operate in variety of ways in Kenya where undeveloped capital market forces entrepreneurs to rely on self-financing or borrowing from friends or relatives. Lack of access to long-term credit for small enterprises forces them to rely on high cost short term finance. For Kenyan SME's the formal banking system is too expensive and inconvenient. Whereas banks consider SMEs with no transaction history are too risky because their ability to repay loans is not yet known. These Unbanked SMEs may also not have collateral to access formal credit. Another issue is that these unbanked SMEs might not have the skills to run the business professionally. They may not have proper bookkeeping procedures, inventory systems, business plans or income statements making it hard for a bank to evaluate them (Frempong, 2007).

In Kenya by 2007, there were about 2.2 million MSME's, of which 88 percent are non-registered (Cowan et al. 2007). Of this non-registered group, only 23 percent have bank accounts, and only 10 percent have ever received credit from a formal source. Banks have a fiduciary duty to make prudent loans with their depositors' and investors' funds. Therefore, most limit their risk with the SME market either by not lending at all or by charging high interest rates and requiring at least 100-percent collateral coverage. Many SME's are reluctant to seek credit. In a survey, the vast majority of bank credit customers indicated that the costs and interest rates of getting a loan are high, it is difficult to meet the requirements for getting a loan and there is a common perception that borrowing from a formal lender will imply losing assets and property.

Though commercial banks face several problems, the main problem that the Kenyan banks have continued to face is directly related to lax credit standards for borrowers and poor portfolio risk management. SMEs have been the hardest hit in accessing credit worldwide because they are considered a high risk group. Credit scoring would provide a framework where each applicant would be ranked in accordance with their riskiness thus allowing those with good credit history to receive credit and denying those who would probably default. A credit scoring system may therefore serve to bridge this gap in provision of information and risk assessment making it easier for SME's to access formal credit.

Problem of Research

Banks that have adopted credit scoring have realized significant increases in small business and micro business loans in the total lending portfolio. The use of credit scoring is not universal with about 47 percent of banks surveyed using some form of credit scoring for small business lending (Cowan et al., 2006). Small firms have experienced shrinking of credit availability with the use of credit scoring (Andrew, 2005). However, small businesses in the US are not necessarily disadvantaged in accessing credit due to the use of credit scoring (Berger et al., 2005). Credit scoring therefore has the potential to offer a number of benefits which can improve access to credit for SMEs. Reichert et al (1983) is not convinced of the predictive ability of scoring approaches and finds that the benefit received from credit scoring may merely relate to the objective and efficient manner in which predictions are made. He does not believe that the scoring methods have much superiority by their own in predicting the probability of default.

Formal financial institutions in Kenya shy away from SME's because they consider them too risky and costly to serve. Lack of working capital, access to credit and access to markets for their products have been established as the major constraints that cause business closures for MSEs (Rukwaro, 2001).

Information on the extent of use of credit scoring practices by banks is nonexistent. Mutie (2006) conducted a study to establish the relationship between credit scoring practices by Kenyan banks and the level of Non Performing Loans. Internationally, a study that sought to compare the use of credit scoring for small business loans and traditional lending found that the use of credit scoring increases the availability of credit for SMEs because there is an increase in the overall quality of lending (Berger et al., 2005).

Miller et.al (2004), states that most credit scoring models are developed and designed to help credit grantors predict the outcome of making a loan to a business. The model is composed of several questions (characteristics) about the applicant. Different answers (attributes) are rated on a point system and assigned score weights. An applicant's score is the sum of all of his or her attribute points - the higher the score, the lower the risk. If the score is equal to or higher than the score an organization has established as the "cutoff," the applicant presents an acceptable level of risk and the institution may decide to extend credit to that applicant. In an automated system, scoring takes place instantaneously, allowing lenders to assess risk and make account origination decisions more quickly, accurately, and objectively.

Accurate credit-granting decisions are crucial to the efficiency of the decentralized capital allocation mechanisms in modern market economies. Credit bureaus and many financial institutions have developed and used credit-scoring models to standardize and automate, to the extent possible, credit decisions. From an economic point of view, increasing the efficiency of credit allocation has the effect of directing resources toward their most productive applications, increasing productivity, output, growth and fairness. From the financial institution's point of view, a small improvement in credit decisions can provide a competitive edge in a fiercely contested market, and lead to increased profits and increased probability of survival (Glenon et.al, 2008). There however has been no study in Kenya conducted on the relationship between credit scoring and access to credit by SMEs.

Virtually all stakeholders in the Kenyan market now realize that SMEs in Kenya are the "missing middle". Their size and demand for credit has outgrown the capacity of microfinance institutions (Mc Donald et al, 2007). It is therefore necessary to evaluate how credit scoring affects access to credit for Small and Medium Enterprises nationwide. The use of credit scoring for SME loan applications will also be established documenting the credit scoring techniques currently in use within the Commercial Banks in Kenya.

Research Focus

It is argued that financial development is good for growth and probably reduces income inequality. Recent studies have focused on the links between financial development and the legal institutions that can facilitate credit contracts, exploring the nature of those contracts based on the power theory of credit, information theories of credit, and the legal origin of institutions. These theories are complementary rather than alternative; they explain how legal institutions could boost financial intermediation and facilitate access to credit for a larger number of customers, some with new and small projects (McDonald et al, 2007). Despite the availability of credit scoring, the relationship of the business with the bank appears to continue to be the dominant factor considered in the lending decision. This finding is true regardless of bank size. This may reflect the value of flexibility in the renegotiation of contract terms in relationship banking. It suggests a preference for discretion based versus rules based decision making in banking. In contrast, those respondents who elected a lending methodology based on credit scoring for the most part did so to obtain a quantifiable measure of risk (Boot 2000).

Cowan et al (2006), conducted a survey of several SMEs who were bank customers in downtown Nairobi. They found that effectively developed and managed credit scoring would help meet their needs in a variety of ways. Some of the ways that credit scoring would meet their needs included: the reduction of reliance on collateral, risk-based pricing that may lower their interest rates and greater credit availability for higher-risk customers, who, without risk-based pricing, would simply be denied loans. In addition, turn-around times from application to approval and funding would likely decrease. Finally, as lenders become more confident in scoring's accuracy, risk-adjusted approval rates may increase.

In summary, SME's lack the collateral necessary collateral for financing their loans and are also subjected to higher interest rates. The average loan amount issued to SME's in Kenya is 5 Million. Credit scoring reduces informational opacity and improves the quality of lending for SME's looking to access long term financing. From the studies above, credit scoring increases the access of credit for SME's because the banks can quantify risk. However despite the availability of credit scoring in the U.S., relationship lending is still a dominant factor. Finally, Hansen et al. (2004) find evidence that suggests that SME's with access to credit grow more rapidly.

The objective of this study was to test the relationship between credit scoring by Kenyan banks and access to credit by SMEs in Kenya.

Methodology of Research

General Background of Research

This was an explanatory study where the research sought to establish a relationship between the use of credit scoring and access to credit for SME loans by Kenyan banks. The study was a census survey which was conducted using a survey questionnaire which was analyzed using statistical methods. The study used a mono-method technique to collect and analyze the data. This was a cross sectional study that gave a snapshot of the current relationship of the data (Saunders et al, 2007).

Sample of Research

A census survey was conducted involving all 43 Commercial Banks in Kenya registered and licensed under the banking act as at 31st December 2009 as per the Central Bank of Kenya. Mutie (2006) conducted a census survey to establish the use of credit scoring and the level of nonperforming loans for all Kenyan banks registered at December 31st 2004.

Instrument and Procedures

This study used primary data that was collected from the respondents of the survey. Data was collected through the use of detailed questionnaires issued to banks. The survey questionnaire had open ended questions where the respondents filled out short descriptive or explanatory responses. The questionnaire also had some questions that required them to pick out a choice from given selection or fill in a response if none of the responses suited them. The results were numbered as the surveys were sent out and then grouped into two groups where one was the odd numbered surveys and the other even. From the two groups, the results were evaluated for internal consistency. Due to time constraints while undertaking the study it was difficult to repeat the surveys to determine repeatability of the study, however, some of the questions in the survey were repeated with slight changes in wording to evaluate the repeatability of the survey. An expert opinion was sought to verify the validity of the content.

Data Analysis

Data was captured and analyzed using Statistical Package for the Social Sciences (SPSS) version 17. Regression analysis was used to determine the relationship between credit scoring and approval rates for SME's. The Simple linear regression model was used to determine the nature of the relationship between credit scoring and an accept/reject decision for SME loan applications. The least squares method was used to find the estimated regression equation of best fit. Further analysis was conducted on the data where the coefficient of determination was calculated to check how well the equation fit the data used. In addition, the correlation coefficient was also computed to find the strength of the linear association between the variables. The t-test was used to test for significance where the P value approach was used (Anderson et al, 2009).

The regression equation used was derived from the equation of a straight line as follows;

$$Y = \beta_o + \beta_1 x_i + e_i$$

Where;

Y was the total number of SME applications accepted at a particular bank.

x_i was the use of credit scoring at a particular bank.

β_o was the Y intercept

β_1 was the gradient of the line fitted to the data determined by the formula $\beta 1 = h/l$

e_i represented the difference between the score predicted by the line for subject *i* and the score that subject i actually obtained.

Results of Research

The research results 3 shows that 71 percent of the banks surveyed had a specific SME department while 29 percent did not. The study inquired about the year in which the individual banks opened specialized SME departments and it was revealed that a 60 percent of the banks had opened SME departments 5 years ago while 30 percent were opened 1 to 3 years ago. Only 10 percent opened SME departments 3 to 5 years ago.

How Banks Determine Whether a Company is an SME

In this section, the study aimed at establishing how the banks determined whether a company was an SME. Data from the study showed that majority of the banks considered sales turnover followed by number of employees. In addition, the cited location of an SME, its ownership and facilities were additional factors considered. The study went further to inquire about the amount of loan requested by SME's. The research data shows that majority of the respondents cited that 25% of the SME's requested Kshs 1000001-2500000, while 14 percent cited that SME's requested Kshs 50,000 – 100000. The remaining 11 percent cited that SME's requested KSh100001-250000, Kshs 100001-250000, Kshs 251000-500000, KSh2500000-5000000 and KSh5000000 and above each. Only 7 percent of the respondents cited that SME's requested loans of KShs1000-50000.

Rate of Approval for SME Applications

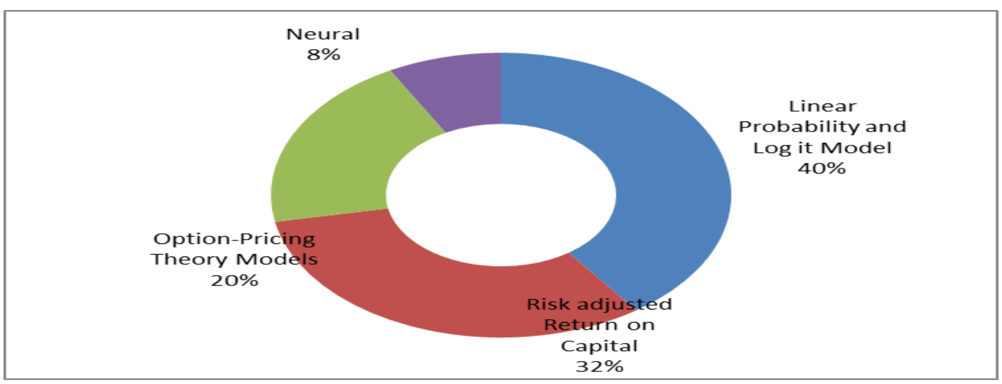
The study further inquired the rate of approval for SME applications. The research data shows that majority of the banks approved 50% of all SME applications comprising 46 percent while 18 percent of the banks approved 20% of all SME loan applications. 14 percent of the banks approved more than 50% of all bank applications and 5% of all SME loan applications. Banks that used credit scoring had higher approval rates (40 percent and above of all loan applications) that those that used relationship banking only. Banks that did not use credit scoring had lower approval rates of less than 40 percent of all loan applications. The results further revealed that 71 percent of the banks considered their approval of SME loans to be moderate against bank expectations while 18 percent had a low rate and 11 percent considered their approval rate to be higher than bank expectations. The study went further to establish the reasons for rejecting loan applications and the research shows that most banks rejected loan applications because of insufficient credit history and lack of sufficient collateral as was shown by 46 percent closely followed by projects not being profitable investments shown by 36 percent. The least cited reason for rejecting loan applications was age of business as was shown by 23 percent.

Credit Risk Assessment

The study proceeded to establish the various credit assessment methods used to evaluate SME loan applications. Results revealed that majority of the banks used both the relationship banking and statistical methods and relationship banking only as was shown by 39 percent each while 36 percent used statistical methods only. The study went sought to determine what credit scoring models were used in credit risk assessment for SME loan applications if any. Results revealed that 58 percent of the banks used a credit scoring model in credit risk assessment for SME loan applications while 42 percent did not.

The study went further to establish the various credit models used in credit risk assessment for SME loan applications. Results shown in figure 1 shows that most banks used linear probability and log it model as was shown by 40 percent followed by 32 percent of the banks which used risk adjusted return on capital while 20 percent of the banks used option pricing theory models in credit risk assessment for SME loan applications. Only 8 percent used neural networks in credit risk assessment for SME loan applications.

Figure 1 Credit Risk Assessment Models Used for SME Loan Applications



Source: Survey Data, (2010)

The study also sought to establish the year the banks started using a specific model for credit scoring. From the research data, 37 percent of the banks started using models for credit scoring in the year 2009 while 21 percent in the 2008. The remaining 16 percent of banks started using credit models for credit scoring in the year 2007.

The study further inquired whether use of credit scoring models improved the credit decisions for SME loans. Results revealed that most of the respondents agreed that using credit scoring models improved the credit decisions for SME loans as was shown by 71 percent while 29 percent cited it did not.

Considerations before Availing Credit for SME's

The study went further to establish the various characteristics considered when evaluating an applicant before availing credit for SME's. Data in this section was analyzed using a likert scale where 1=Least important, 2 = less important, 3= moderately important, 4= More important and 5 = Most important. Data was presented in mean and standard deviation. Results presented in table 1 shows that the most important characteristics considered when evaluating an applicant before availing credit for SME's was capacity to pay shown by a high mean of 4.96 followed by character of borrower shown by a mean of 4.50, collateral/security available as was shown by a mean of 3.89 and economic conditions shown by a mean of 3.78. The least cited characteristic considered when evaluating an applicant before availing credit for SME's was capital shown by a low mean of 3.68.

Table 1 Characteristics considered when evaluating an applicant before availing credit for SME's

Characteristics considered	Mean	Standard deviation
Character of the borrower	4.5000	.96225
Capacity to pay	4.9643	.18898
Economic conditions	3.7857	.78680
Collateral/Security available	3.8929	1.06595
Capital	3.685	.7868

Source: Survey Data, (2010)

Credit Policy and Implementation

The study in this section aimed at evaluating the frequency of credit policy review. Results shows that most of the banks reviewed their credit policy annually as was shown by 48 percent, while 30 percent reviewed their credit policy quarterly. 12 percent of the banks reviewed their credit policy after one year while 10 percent reviewed their credit policy semiannually.

The study went further to establish the various persons involved in formulation of credit scoring models and credit policies. Data in this section was analyzed using a likert scale where 1=Least involved, 2 = less involved, 3= moderately involved, 4= More involved and 5 = Most involved. Data was presented after calculating the mean and standard deviation. Results presented in table 2 shows that senior management were the main persons involved in formulation of credit scoring models and credit policies as was shown by a high mean of 4.39, followed by credit managers and credit committees shown by a mean of 3.85 and board of directors shown by a mean of 3.46. The least involved in formulation of credit scoring models and credit policies were the branch managers as was shown by a low mean of 2.31.

Table 2 Persons involved in formulation of credit scoring models and credit policies

	Mean	Standard deviation
Senior Management	4.3929	1.28638
Board of Directors	3.4643	1.42678
Credit Managers	3.8571	1.50835
Credit Analyst	3.2143	1.61835
Credit Committee	3.8929	1.37003
Branch Manager	2.321	1.0559

Source: Survey Data, (2010)

The study went further to establish the various persons involved in formulation of credit scoring models and credit policies. Data in this section was analyzed using a likert scale where 1=Least involved, 2 = less involved, 3= moderately involved, 4= More involved and 5 = Most involved. Data was presented after calculating the mean and standard deviation. Results presented in table 3 shows that credit committees were the most involved in the credit decision making for SME loans as was shown by a high mean of 4.39 followed by credit managers shown by a mean of 4.25 and credit analysts shown by a mean of 3.8. The least involved in credit decision making for SME loans were board of directors as was shown by a low mean of 2.32.

Table 3 Persons involved in the credit decision making for SME loans

Persons involved	**Mean**	**Standard deviation**
Senior Management	2.9643	1.79469
Board of Directors	2.3214	1.56474
Credit Managers	4.2500	1.26564
Credit Analyst	3.8571	1.35303
Credit Committee	4.3929	1.19689
Branch Manager	3.1071	1.34272
Loan Officer	3.321	1.4156

Source: Survey Data, (2010)

Discussion

Regression analysis was used to determine the relationship between credit scoring and approval rates for SME's.

Table 4 Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Significance
	B	Std. Error	Beta	t	
(Constant)	1.570	.218		7.209	.000
Approval rate for SME	0.24141	.045	-.323	-1.602	.123

a Dependent Variable: Use of credit scoring model

Results from table 4.4 shows that there is a relationship between use of credit scoring model and approval rate for SMEs in Kenya.

The researcher conducted a multiple linear regression analysis so as to determine the relationship between credit scoring and the three variables.

The regression equation ($Y = \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X3\ \varepsilon$) was:

$$Y = 2.539273 + 0.229552X1 - 0.07023X2 + 0.082219X3 + \varepsilon$$

Whereby Y = Access to credit by SMEs
X1 = Credit risk assessment
X2 = Credit scoring model
X3 = Credit policy and implementation

Unstandardized Coefficients	Standardized Coefficients	T	Significance		
	B	Std. Error	Beta		
(Constant)	2.53927	0.50667	0.87688	5.01171	1.45E-06
Credit risk assessment	0.229552	0.76767	0.25914	3.22432	0.00154
Credit scoring model	-0.0702	0.06594	-0.0818	-1.0651	0.2885
Credit policy and implementation	0.08222	0.05495	0.11989	1.49627	0.1366

According to the regression equation established, taking all constant at zero, access to credit by SME's will be 2.539273. The data findings analysed also shows that taking all other independent variables at zero, a unit increase in credit risk assessment sub-dimension will lead to a 0.229552 increase in access to credit, a unit increase in credit policy and implementation sub-dimension will lead to a 0.082219 increase in access to credit by SME's.

Table 4.15 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.985[a]	.970	.969	2.24186

Predictors: (Constant), number of applications approved where credit scoring is used

Coefficient of determination explains the extent to which changes in the dependent variable can be explained by the change in the independent variable or the percentage of variation in the dependent variable (number of applications approved) that is explained by the independent variable (the number of applications approved where credit scoring is used).

The the number of applications approved where credit scoring is used explain only 19.4% of the number of applications approved as represented by the R^2. This therefore means the the number of applications approved where credit scoring is used only contribute about 19.4% to the number of applications approved while other factors not studied in this research contributes 80.6% of the number of applications approved. Therefore, further research should be conducted to investigate the other factors (80.6%) that contribute to the number of applications approved.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
	(Constant)	1.472	.955		1.542	.135
	b	0.804	.049	.985	28.842	.000

Dependent Variable: number of applications approved

The researcher conducted a multiple regression analysis so as to determine the relationship between credit scoring practices by commercial banks and access to credit by small and medium enterprises. The regression equation (**$Y = \beta_0 + \beta_1 X_1 + \varepsilon$)** will be:

$$Y = 1.472+0.804X_1 +2.24186$$

Whereby Y = number of applications approved

X_1 = the number of applications approved where credit scoring is used

ε = Std. Error of the Estimate

According to the regression equation established, taking the number of applications approved where credit scoring is used constant at zero, the number of applications approved will be 1.472. The data findings analyzed also shows that taking all other variables at zero, a unit increase in the number of applications approved where credit scoring is used will lead to a 0.804 increase in number of applications approved. This infers that credit scoring contributed to the number of applications approved.

Conclusions

Credit scoring is a relatively new concept in the Kenyan market where of all banks surveyed hardly any banks were using credit scoring before the year 2000. The earliest most banks used credit scoring was between the years 2000-2004. Lack of access to credit for SME's has been cited as a key issue for SME's worldwide and one solution that has been offered by researchers is the use of credit scoring in the loan appraisal process.

This study revealed that the approval rate for SME loans at banks that used credit scoring was 40 percent higher than those banks that used relationship banking only. There is room for improvement in the decision making process if more banks will use credit scoring while assessing loans for SME's. The benefits gained from the use of credit scoring include accuracy in the decision making process. This accuracy is gained due to the reduction of adverse selection cases where better assessments are made in regards to an application therefore providing better decision making.

SME's will therefore benefit immensely if more banks use credit scoring in the decision making process for loan approvals. This will be one way to reduce this major problem faced by SME's in lack of access to credit.

There are cost implications for banks wanting to start using credit scoring in the decision making process and therefore they should survey the market and find the best credit model to invest in. Most banks surveyed reported that they used linear probability and log it model.

Finally, banks need to be aggressive on the review of their credit policies since the market today is so versatile and to win in this market, regular review and appraisal of credit policy would see many banks ready to face any challenges that they may encounter. 48 percent of the banks surveyed reviewed their policies annually, banks should attempt to review their policies at least semi annually.

Recommendations for Further Study

This research study was focused on the relationship between credit scoring by Kenyan banks and access to credit by SMEs in Kenya. More research needs to be carried out in other lending institutions such as Sacco's and microfinance institutions to get more insight on various credit scoring models used in the country in relation to access to credit for SME's registered with these organizations.

This study also suggests that there are many more reasons besides the use of credit scoring that affect access to credit for SME's. This is shown by the fact that credit scoring independently only constitutes 19.4% to the number of applications approved. A study could be conducted to research into other factors that affect the approval of credit for SME's in the country.

Further analysis can also be carried out to find out which credit scoring model gives the best prediction of the probability of default for SME loans. This would give an insight into what the best credit scoring models to invest in would be especially for the banks that have not implemented credit scoring in their decision making process. Mutie (2006) looked at the relationship between the use of credit scoring and the level of non-performing loans. There are various dimensions that a researcher may test the use of credit scoring in the market today to provide more information on credit scoring uses, implications and deficiencies.

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