AN ANALYSIS OF THE EFFICACY OF BORROWER CREDIT SCORES IN PREDICTING CREDIT REPAYMENT PERFORMANCE: A CASE STUDY IN AGRICULTURAL FINANCE CORPORATION-AFC

BY

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DECLARATION

This is my own original work, and it has never been presented to any University or institution for the award of any academic qualification.

Signature…… Date: ……

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D61/79213/2012

This is to certify that this dissertation has been submitted with our approval as University supervisors.

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I take this opportunity to give thanks to the Almighty God for seeing me through the completion of this project.

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The entire staff of AFC cannot pass without my special acknowledgement for taking time off their busy schedule to provide me with all the information I needed in the course of the research. Without their immense cooperation I would not have reached this far.

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Thank you all. May the Almighty God bless you abundantly.

DEDICATION

I dedicate this work to my Father, my Sisters and all those who supported me in the completion of this project.

ABSTRACT

Institutions involved in lending face several risks such as financial risk, Operational Risk, Economic risk, and Credit Risk like any other institution. However Credit risk is one of the major risks within most institutions which are likely to make a company go under. To assess credit risk, lenders gather information on a range of factors, including the current and past financial circumstances of the prospective borrower, the nature and value of the property serving as loan collateral. Poor credit risk management practices leads to rising non-performing loans which compresses profit margins.

The study sought to establish the relationship between the borrower credit score and its credit repayment performance. The researcher adopted a co relational research design. The study population consisted of all 100 corporate clients who had been given loans by the Agricultural Finance Corporation (AFC) over a period of 5 years. This study used data collected through secondary sources such as the financial statements of a particular client in his file which formed the basis of giving the client loan as well as their credit scores over a period of five years. Data was captured and analysed using Statistical Package for the Social Sciences (SPSS) version 21. Regression analysis was used to determine the relationship between credit scoring and repayment performance of a borrower.

The study found out that the use of credit scoring of a particular borrower positively and significantly influenced the repayment performance in AFC as it facilitates quick loan turnaround, consistency in lending, and basis for risk pricing. The study recommended that AFC should cooperate with other credit institutions to ensure that they get in depth information on clients before advancing loan to them. This will make it easy to know the credit history of a client and the repayment performance of individuals. In turn this will benefit AFC and will be important to help avoid a situation where they award loans to clients who have defaulted loans elsewhere. The credit scoring process at times can be long and tedious and as a consequence scaring clients away to look for credit elsewhere. AFC should ensure that the credit scoring process is short but effective. More research needs to be carried out in other lending institutions such as Saccos and microfinance institutions and commercial banks to get an insight on various credit scoring models or methods used.

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ABBREVIATIONS

AFC	-	Agricultural Finance Corporation
GDP	-	Gross Domestic Product
MFIs	-	Microfinance Institutions
MSE's	-	Micro and Small Enterprises
NPL	-	Non-Performing Loans
NPL	-	Non-Performing Loans
SPSS	-	Statistical Package for the Social Sciences
U.S	-	United States

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

1.1.1 Theoretical Background

Institutions involved in lending face several risks such as financial risk, Operational Risk, Economic risk, and Credit Risk like any other institution. However Credit risk is one of the major risks within most institutions which are likely to make a company go under. To assess credit risk, lenders gather information on a range of factors, including the current and past financial circumstances of the prospective borrower, the nature and value of the property serving as loan collateral. According to Brown, Falk and Fehr (2004) institutions involved in lending, carefully assess credit risk, which is the possibility that borrowers will fail to pay their loan obligations as scheduled. The judgments of these institutions affect the incidence of delinquency and default, two important factors influencing profitability. The precision with which credit risk can be evaluated affects not only the profitability of loans that are originated but also the extent to which applications for loans that would have been profitable is rejected. For these reasons, lenders continually search for better ways to assess credit risk.

According to information theories of credit which refer to the amount of credit to firms and individuals which 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 has 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 problem of financing non-viable projects, and therefore extend more credit (Stiglitz et al, 1981).

Also according to the power theory of credit, 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).

This study examined the way institutions involved in lending assess credit risk and how credit risk relates to loan performance. It also drew on the extensive literature that examines the performance of farm loans and the way that performance relates to borrower, loan, and property characteristics. It's because of this reasons that lending institutions establish guidelines for lending officers to follow when evaluating applications here as credit history scores and the application scores. The difficulties in assessing the often complex information about individuals' past and current experience with credit has helped motivate the adoption of scoring methods for interpreting credit history.

1.1.2 Credit History Score

A credit history score represents the estimated relationship between information on the credit histories of individuals contained in credit bureau reports and the likelihood of poor loan performance. While on the other hand application scores are most often used to determine the risk weights assigned to these factors not generally available to the public. Most Institutions use mainly the credit information from the credit bureau known as Metropol Credit Reference Bureau Ltd which gives all available credit history scores of a certain prospective borrower on and when required. These bureaus are made available to help lenders assess risk on a wide variety of loans.

The use of credit scores can help with the collection and loss mitigation process by, for example, allowing lenders to concentrate staff resources on borrowers whose credit scores indicate greater risk of delinquency. Lenders can also use credit scores to facilitate strategic planning decisions. For instance, lenders concerned about possible attrition in their loan portfolio due to competition for refinancing may offer a new loan to those current borrowers whose credit scores indicate that they would be most attractive to potential competitors.

The development of a credit scoring model requires that lenders have access to a large amount of historical information on the performance of loans with similar characteristics data that is seldom available for a smaller bank (Rowland, 1995). According to (Brown, Falk & Fehr, 2004) implicit contracts between lenders and borrowers, thus, banking relationships can motivate high effort and timely repayments. (Fehr & Zehnder, 2005) also confirm that long-term relationships are a powerful disciplinary device. They posit that in credit markets dominated by short-

term interactions, borrowers and their scores at the point of administering the loan may not necessarily have a linear correlation with its repayment performance.

1.1.3 Credit Repayment Performance

Repayment performance is the ability of a borrower to service his loan effectively as to and when they installments fall due. As repayments are not third-party enforceable, many borrowers default and lenders cannot profitably offer credit contracts (Brown, Falk, & Fehr, 2004). The availability of information on past repayment behavior allows lenders to condition their offers on the borrowers' reputation. As borrowers with a good track record receive better credit offers, all borrowers have a strong incentive to sustain their reputation by repaying their debt (Orebiyi, 2002). Therefore, by repeatedly interacting with the same borrower, lenders establish long-term relationships that enable them to condition their credit terms on the past repayments of their borrower. As only a good reputation leads to attractive credit offers from the incumbent lender, borrowers have strong incentives to repay.

1.1.4 Agricultural Finance Corporation

AFC is a parastatal operating with over 40 branches country wide. The major problem facing AFC has been identified as failure to manage loan default rates (AFC Annual Reports, 2007, 2008, 2009). The management of the institution depends on incentives to repay on time; instant arrears information and delinquency tracking; immediate action to enforce repayment; and rigorous recovery in case of defaulting to achieve loan repayment (Annual Report, 2005).

1.2 Statement of the Problem

Poor credit risk management practices leads to rising non-performing loans which compresses profit margins. Small firms have experienced shrinking of credit

availability with the use of credit scoring (Andrew, 2005).There is a negative relationship between credit risk management and non-performing loans implying that the level of non-performing loans is inversely affected by credit risk management practices adopted by commercial banks (Kamau, 2012).To most of the transition economies, lending activities has been a controversial and difficult matter. This is because business firms on one hand are complaining about lack of credit and the excessively high standards set by financial institutions while financial institutions on the other hand have suffered large losses on bad loans (Richard, 2006). It has been found out that in order to minimize loan losses thus credit risk, it is essential for financial institutions to have an effective credit risk management system in place (Basel, 2010).

Companies use debt in many ways to leverage the investment made in their assets, leveraging the return on their equity. This leverage, the proportion of debt to equity, is considered important in determining the riskiness of an investment; the more debt per equity, the riskier. For both companies and individuals, this increased risk can lead to poor results, as the cost of servicing the debt can grow beyond the ability to repay due to either external events (income loss) or internal difficulties (poor management of resources) (Swanson, et al, 2008). Excesses in debt accumulation have been blamed for exacerbating economic problems such as deflation and credit crunch, as it compels the organizations to invest more in their recovery.

Several studies have been done globally on the relationship between credit risk management practices and nonperforming loans. For instance, (Greening and Bratanovic, 2003) studied the basis of a sound credit risk management system

including guidelines that clearly outline the scope and allocation of bank credit facilities and the manner in which the credit portfolio is managed. This study reviewed how loans are originated, appraised, supervised and collected. (Derban, Binner & Mullineux, 2005) studied credit risk management practices among commercial banks in Jordan and recommended that borrower's attributes be accessed through qualitative models and be assigned numbers with the sum of the values compared to a threshold. This technique minimizes processing costs, reduces subjective judgments and possible biases. The rating systems will be important if it indicates changes in expected level of credit loan loss. (Nkusu, 2011) did a study on nonperforming Loans and macro financial vulnerabilities in advanced economies and established that a sharp increase in NPL (Non-Performing Loans) triggers long-lived tailwinds that cripple macroeconomic performance from several fronts.

In Kenya, (Talel, 2010) did a study on the risk management practices adopted by banking institutions in Kenya. The study reveals that risk management in Kenya is considered a vital factor for organizations to meet their desired goals and objectives. (Ogol, 2011) reviewed the liquidity risk management practices in micro-finance institutions in Kenya and revealed that MFIs had in place liquidity risk management practices. (Oretha2012) did a study on the relationship between credit risk management practices and financial performance of commercial banks in Liberia where it showed a positive relationship between the credit risk management practices and financial performance.

From the above studies discussed, it is evident that no known study has sought on the relationship between credit score and credit repayment performance of a borrower. No

known study has focused on doing an analysis of the efficacy of borrower credit scores in predicting credit repayment performance. This study therefore sought to fill this research gap by seeking answers to one research question:

What is the relationship between the borrower credit score and its credit repayment performance?

1.3 Objectives of the Study

i. To document the portfolio loan default rate at the AFC

ii. To establish the relationship between the borrowers' credit scores and the credit repayment performance in AFC.

1.4 Significance of the Study

i. The study will add to the already existing literature on determinants of credit repayment performance.

ii. The study is expected to enable financial institution identify the credit management policies that are critical in the lending business.

iii. The financial institution used as a case study in the research will be able to improve on its lending policy formulation and assessment of its credit risk management abilities.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter covered the review of the literature on the relationship between the borrower credit scores in predicting credit repayment performance.

2.2 Theoretical Review

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). 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).

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2.2.1 Information Theory of Credit

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 has 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 problem of financing non-viable projects, and therefore extend more credit (Stiglitz et al, 1981).

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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).

2.2.3 Legal Origin Theory of credit

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.

2.2.4 C's of credit

Lending Institutions build their credit policy around the 5 C's of credit: Character (of the applicant), Capacity to borrow, Capital (as back up), Collateral (as security), economic Condition. These assessments are based upon lenders own experience taking into consideration not only historical information but also the futures view of the borrowers' prospects (MacDonald et al, 2006). Character refers to as the maturity, honesty, trustworthiness, integrity, discipline, reliability and dependability of a customer. A person of good character will be open and divulge information about them in the process of the decision making. Capacity refers to the ability of a client to service his debt obligation fully. This is determined by reviewing sources of income

versus obligations to determine his paying ability based on past information about borrower. Capital refers to the borrower's wealth position measured by financial soundness and market standing. The loan officer looks at what would happen if there is deterioration in the borrower's financial condition. Would they still be able to meet the debt obligation? Condition looks at the commercial, socio-economic, technological and political environment to assess the successful implementation of the project therefore the recovery of the loan issued. It looks at the sources of cash and how they vary with the business cycle and consumer demand. Collateral is a security issued to secure a loan. These guarantee the issuer of credit of a source of income in the event of failure or inability of the loan holder to pay their debt. Securities include land, building, 14 machinery and others which may sometimes prove to be difficult to dispose in loan recovery (MacDonald et al, 2006).

2.3 Determinants of Credit Repayment Performance

2.3.1 Risks Faced By Financial Institutions

There are a number of risks faced by financial institutions which could be of delinquencies, frauds, staff turnover, interest rate changes, and regulatory. These risks can be classified as Interest risk, Market Risk, Foreign Exchange risk, Credit risk, Liquidity risk and Operational risks.

Market risk also known as volatility risks the day-to-day fluctuations in a stock's price. Market risk applies mainly to stocks and options. As a whole, stocks tend to perform well during a bull market and poorly during a bear market - volatility is not so much a cause but an effect of certain market forces. Because market movement is the reason why people can make money from stocks, volatility is essential for returns,

and the more unstable the investment the more chance there is that it will experience a dramatic change in either direction.

Interest Rate Risk is the risk that an investment's value will change as a result of a change in interest rates. This risk affects the value of bonds more directly than stocks.

Foreign-exchange risk applies to all financial instruments that are in a currency other than your domestic currency. When investing in foreign countries you must consider the fact that currency exchange rates can change the price of the asset as well. As an example, if you are a resident of America and invest in some Canadian stock in Canadian dollars, even if the share value appreciates, you may lose money if the Canadian dollar depreciates in relation to the American dollar.

Liquidity risk is the risk that a given security or asset cannot be traded quickly enough in the market to prevent a loss (or make the required profit).Liquidity risk can be classified into two categories which include, Asset liquidity where an asset cannot be sold due to lack of liquidity in the market - essentially a sub-set of market risk and funding liquidity which entails risk that liabilities cannot be met when they fall due.

Credit risk is a non-financial character and result mainly from human errors, system failures and natural disasters. Credit risk, also called default risk, is the risk associated with a borrower going into default (not making payments as promised). Credit risk is the risk that a company or individual will be unable to pay the contractual interest or principal on its debt obligations. This type of risk is of particular concern to investors who hold bonds in their portfolios. Government bonds, especially those issued by the federal government, have the least amount of default risk and the lowest returns, while corporate bonds tend to have the highest amount of default risk but also higher interest rates.

Credit risk is directly related to the portfolio of the organization and is one of the most significant risks from a financial perspective. Whenever a financial institution lends to a client there is an inherent risk of money not coming back, however it cannot afford to restrict as this will result to lose of clientele.

To manage credit risk, financial institutions can employ strategies such as; they should try to predict the consumer's behavior before the loan agreement is made. They could also use stringent vetting processes to sort out and deny borrowing to those most likely to default on their loan they can protect themselves from the majority of credit risk.

2.3.2 Methods of assessing credit risk

To assess credit risk, lenders gather information on a range of factors, including the current and past financial circumstances of the prospective borrower, the nature and value of the property serving as loan collateral. An increasingly prominent tool used to facilitate the assessment of credit risk in lending is credit scoring based on credit history and other pertinent data, and the article presents new information about the distribution of credit scores across population.Credit-scoring models use such information as financial condition, prior payment history, Public filings, industry comparative data and company demographics (years in business, number of employees, industry, sales volume) to determine the risk of default.

Based on the business owner's personal credit history, loan approval is based primarily on computer analysis. A loan can be approved in hours, rather than days, at lower cost to the financial institution (Hansell, l995).In addition to decisions regarding approval or disapproval of loan applications, credit scoring can be used for the following purposes (Barefoot, Friedland,l996),(Asch,l995):Pricing loans based on

degree of risk, differential handling of late payments and delinquencies, differential handling of collections based on outcome predictions, estimating the amount of profit an account is likely to generate and identifying applicants who may be candidates for other services as well as targeting prospective customers.

2.3.2.1 Credit Scoring

Credit Scoring is a statistical method used to predict the probability that a loan applicant or existing borrower will default. Credit scorecards are defined as tools used to predict the behavior of new applicants based on the performance of previous applicants. Scorecards can also be used to predict the performance of existing accounts, based on past experience of accounts with similar characteristics. Credit scorecards come in two basic types, judgmental and statistical. Judgmental (also known as expert-based) scorecards are essentially a set of formal, quantitative criteria developed by incorporating the best practices and the knowledge of senior credit officers. They are especially useful for standardizing, simplifying, and speeding up decision-making. Statistical scorecards are built with data from actual loans and applications, and they have the important added benefit of quantifying the probability of default. Among statistical models, there are two basic types: generic- which is built with data from a variety of lenders and performance reported to a centralized repository such as a credit bureau, and custom- built with the performance data from a specific financial institution. A custom scorecard may use a generic score as one of its inputs (U.S. Comptroller of the Currency, 1998).

The development of a credit scoring model requires that lenders have access to a large amount of historical information on the performance of loans with similar characteristics of data that is seldom available for a smaller bank (Rowland, 1995). However, with credit scoring, lenders no longer need to perform the in-depth financial

review of each borrower as they previously did. Instead, the model identifies a few key pieces of information that assess the statistical probability that a borrower will repay (Zuckerman, 1996).

In credit history scoring systems, prospective applicants receive a numerical score based on their individual credit history information; the score reflects the historic performance of loans extended to individuals with similar characteristics. Individuals with identical credit scores may have received them for different reasons, but within the context of the credit scoring index, they are assessed to have equal likelihoods of the predicted behaviour, that is, they are considered to pose the same credit risk.

Mutie (2006), states that Credit scoring has not been widely used in business lending but that this has changed over time due to enhanced computer power and new methodologies as well as data increase. He further states that a well designed model will give a higher percentage of high scores to borrowers whose loans will perform well and higher percentage of low scores to borrowers whose loans won't perform well.

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.

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.

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).

2.3.2.2 Application Scores

Besides Credit scoring, Lenders also use application scores which is based on all information relevant to a loan application, application scores are most often used to

determine the risk weights assigned to these factors in establishing scores which are not generally available to the public. Nonetheless, most scoring systems share a number of elements. For example, most credit history scoring systems consider records of bankruptcy, current and historic ninety-day delinquencies, and the number of credit lines. Most mortgage application scoring systems additionally consider factors such as the loan-to-value ratio, the ratio of debt payment to income, and measures of employment stability. However, the risk weights assigned to these factors vary from system to system.

2.3.3 Gross Domestic Product

Several papers show that gross domestic product (GDP) growth plays a significant role in repayment performance. Gompers and Lerner (1998) established that higher GDP growth implies higher repayment opportunities for entrepreneurs, which in turn lead to a higher need repayment performance. While Jeng and Wells (2000) do not find a significant effect of GDP growth on repayment performance, (Bernoth, Colavecchio & Sass, 2010) confirm the positive relationship between repayment performance and GDP.

During period of high GDP growth and increase in aggregate demand, financial institutions experiences solid performance and easily obtain funds from the clients. This translates to a larger and more diversified portfolio for financial institutions which subsequently are more likely to post good results. It is not surprising that cornerstone partner of financial institutions such as hedge funds, mutual fund managers, insurance companies and pension funds have sought to increase their exposure to this rapidly growing asset class in their fund allocations particularly when faced with high liquidity (Bernoth et al, 2010).

2.3.4 Inflation

Inflation refers to the general increase in the price of commodities over a given duration. Inflation tends to push up the price of commodities without a corresponding increase in their real value. Financial institutions are adversely affected by inflation since they tend to hold investment over duration of time between acquisition and exit (Nielsen, 2011). Inflation has an adverse effect on the repayment performance as borrowers struggle to raise cash for repaying their loans due to the little money in circulation and the unwillingness of businesses to make investments to avoid losses (Parra-Bernal and Blount, 2011).

2.3.5 Advantages and Uses of Credit Scoring

To monitor the quality of their portfolio and to determine the appropriate level of reserves to set aside for losses, lenders may periodically obtain credit scores for borrower with outstanding loans. Similarly, institutions can use credit scores to evaluate the quality and value of mortgages they are considering for sale. For example, credit scores can help identify the credit risk of seasoned loans and help determine the appropriate grade (risk) pool into which individual loans should be placed for sale to the secondary market. Lenders may use credit scores to differentiate risk categories of loans for pricing decisions. Rather than reject higher-risk loans for origination or purchase, the lender may decide to price the risk by requiring an interest rate premium on those loans with higher predicted probabilities of default.Credit reporting agencies also offer preapproval screenings based on “canned “prescreens or individually developed queries. In general, credit unions outsource the development of a credit-scoring model to minimize costs, while taking advantage of the marketplace expertise.

Advantages of credit scoring include quick loan turnaround, consistency in lending, and basis for risk pricing. Many credit unions use credit-scoring models to market loan products, such as preapproved auto and credit card loans. Credit scoring allows these credit unions to send out pre-approved mass mailings to targeted groups. Credit unions use credit scoring as the basis either for loan decisions or as a loan officer's tool in a judgmental loan decision. Credit unions manage the volume of loans and level of risk assumed by setting credit score ranges loans must meet.

2.3.6 Weaknesses of Credit Scoring

Although credit scoring can reduce costs and bring more consistency to the lending process, its reliability depends upon the accuracy, completeness, and timeliness of the information used to generate the scores. For example, credit scores based on erroneous or seriously incomplete credit report information are not likely to accurately measure the risk posed by an individual applicant and may lead to unwarranted actions on an application.

Also, concerns have been expressed that credit scores may not accurately gauge the creditworthiness of individuals whose experiences differ substantially from those on whom the index is based. If the baseline population used to generate the scoring index is not sufficiently diverse, then scores may lack predictive power for the underrepresented segments of the overall population. Lenders relying too heavily on scores might not give adequate consideration to special circumstances, such as a recent illness, that might mitigate a low score. Further, scores may lack predictive power if the underlying model used to generate the scores does not reflect current relationships between risk characteristics and measures of loan performance. Builders of credit scoring models report that model performance deteriorates over time. Thus,

periodic validation may be necessary to ensure that scoring models retain their accuracy.

A number of major financial institutions such as Wells Fargo, Bank America, and American Express began to develop small business lending operations, using directing marketing techniques to attract customers (Zuckerman, l996).Competitive strategy in the marketplace often calls for emulation of competitors when they adopt successful approaches to marketing their products and services. Clearly, financial institutions regard the system of credit scoring to be a competitive advantage, giving them an edge over community banks. Currently, credit-scoring methods appear to be less practical for smaller banks due to high capital costs and the low loan volume of individual community banks. On the other hand, the opportunity to benefit from credit scoring may be so attractive community banks may find ways to incorporate the technique into their lending practices.

Credit scoring has its potential down side. This has been summarized by one writer (AsBarefoot, 1996): Credit scoring may actually restrict credit to those with limited credit histories whose strengths are hard to demonstrate on paper. Lenders May give less attention to these applicants who are marginal on paper but whose character and commitment warrant the benefit of the doubt. Credit scoring may lead to unfair lending having a disproportionately adverse effect on some groups, such as minorities. Scoring systems with their customer databases could lead to infringement on privacy. Despite these general concerns, research shows that some customers and banks do like the Credit-scoring system. For customers the process provides a much simpler application process, answers in a shorter time frame, reduced information

requirements, and access to credit when they need it. Credit scores can be used in a good way, and they can be used in a bad way.

There will continue to be a market for nonstandard small business lending and a role for regional and community banks. Of course, we should also expect that small businesses that do not easily fit the standard models will not share in the cost savings that credit scoring will provide (Yellen, 1996).In addition to cost efficiency, credit scoring is thought to improve the effectiveness of the loan decision-making process. One possible reason credit scoring is thought to be so effective is its not relying so much on the firm's financial statements, which tend to be unsophisticated and understate income for tax reasons. Also, many entrepreneurs mingle their personal and business finances, keeping debt in the business, but cash in their personal account.

Now, financial institutions are realizing that it is illogical to be willing to make large personal loans to self-employed people, yet give the same clients a hard time when they apply for business loans. In other words, the owner and the business are the same (Hansell, 1995). Perhaps the most significant implication of the credit-ranking process is that it permits banks to price loans according to the risk of the obligor. Most institutions, having decided that a loan is bankable, will vary the spread according to the size of the credit facility or perhaps its contractual life, but it is rare for a bank to vary the rate charged according to the credit quality of the obligor, especially for middle market and small business loans (Greenspan, 1994). As observed by Pearson (1994), successful pre-screening of prospects and existing customers can eliminate the countless hours loan officers may spend evaluating referrals for which there is

virtually no chance of any revenue flowing to the bank through a prudent and successful extension of credit.

Early works of (Brown & Zehnder, 2006) stress the information production function of banks. Screening and monitoring procedures give an information advantage to banks that allow them to overcome information and incentive problems between the bank and the borrower. Therefore, the main benefit attributed to bank financing with respect to other sources of finance is that banks help overcome problems of asymmetric information by producing and analysing information and by designing loan contracts that improve borrowers' incentives.

2.3.6 Why Loanees Default

Basically borrowers default if one of the key drivers of the repayment is affected. Over/multiple borrowing mainly when the loans becomes easily accessible, the borrower may avail loans from multiple sources beyond his repayment capacity hence becoming a defaulter. Also utilization of a loan for purposes which are not income generating and different from what they had earlier borrowed it for may result to default. Loss of job or breakdown of the business which was the sole source of servicing the loan, or death of the main wage earner could result to loan default inevitably. Due to lack of well-established credit appraisal policy, often loans are taken for commission by others known as loan sharing hence resulting to loan default.

2.3.7 Mitigating Credit risk

Lenders mitigate credit risk using several methods such as, Risk based pricing where they charge a higher interest rate to borrowers who are more likely to default. They

consider factors relating to the loan such as loan purpose, credit rating, and loan-to-value ratio so as to estimate the effect on yield. Lenders and bondholders may also hedge their credit risk by purchasing credit insurance, which transfer the risk from the lender to the insurer. Lenders may also reduce the amount of credit extended; either reduces the payment terms as this will help reduce credit risk. They may also engage in giving covenants into loan agreements such as give a clause like periodically report its financial condition etc. Lenders may reduce credit risk by diversifying the borrower pool as well as offer deposit insurance as a guarantee to those with loans.

2.4 Empirical Review

Rukwaro (2001) carried out a study whose main objective was to determine how MFI's allocate credit to MSE's. The study focused on the financing aspects of MSE's, she considered some aspects of financing such as financing requirements and various sources of financing for MSE's. She found that 55% of the funds were from business income, while 15% of the funds came from friends and relatives. In addition, 10% of funding came from MFI's and 20% from personal savings. Some of the credit rationing criteria she cited included particular nature of business, location and savings as the most important factors. Proper books of accounts, no outstanding debt were relatively important as well. In conclusion, Rukwaro's study found that credit rationing and credit size are affected by the operational levels of MSE's.

Wasonga (2008) carried out a case study to determine the challenges the commercial banks face in the process of financing SME customers in Kenya. He sought out to examine how commercial banks try to address these challenges and also examine the banking needs of SME's. He found that major challenges faced by these banks included lack of banking or credit history to allow SME's to access credit from banks.

SME's do not have valuable collateral to act as security for financing. Some of these SME's were also not registered and lacked financial statements required for financing. He also found that accounting was not properly done therefore they had no proper books of accounts.

In addition, Wasonga finds that banks need to come up with products that address SME needs. Banks should focus on funding for SME working capital needs. Currently, temporary overdrafts are used to finance immediate working capital needs. 60% of SME customers requested for loans ranging between Kshs. 500,000 and 1,000,000, 26.7% seek loans between Kshs. 1Million and 5 Million. Commercial banks were found to be charging various incidental costs that made the loans more expensive. The interest rates charged were between 19.75%-21%. The default rate at Fina bank was found to be very low because of the stringent methods put in place and the various collection methods used.

Frame et al. (2004) add two more dimensions to the characteristics of the likely SBCS loan recipients, income and location. They examine variation in small business loans under $100K originated in 1997 by the survey banks in each U.S. census tract. One finding is that SBCS is associated with increased lending of approximately the same magnitude in low- and moderate-income census tracts as in middle- and upper-income tracts. Another finding is that banks using SBCS lend more outside of their local markets than non-scoring banks. This is expected, given that SBCS does not require close personal contact (as in relationship lending) or much physical monitoring (as in other transactions technologies). This finding also suggests that SBCS may be associated with increased competition for credits, given that banks are not as

constrained by location and, as discussed below, may raise policy questions about appropriate geographic market definitions for antitrust analysis.

Berger et al. (2005) examine the effects of using SBCS to reduce informational opacity on loan maturity. They exploit the differences in the information sets between banks that use SBCS in a form of the "discretion" manner (that use SBCS, but not to automatically approve/reject applicants) versus those that do not use SBCS at all. Thus, they test the effect of using credit scores in addition to information gathered using one of the other lending technologies in underwriting small business credits. The authors find that debt maturity is significantly longer for low-risk borrowers when they borrow from discretion banks that use SBCS to reduce informational opacity. This finding as may be viewed as additional evidence in favor of increased small business credit availability from SBCS since some borrowers are able to secure credit for longer intervals as a result of the use of this technology.

The studies by Berger (2005), find that SBCS increases small business credit availability in at least one dimension; overall quantity of lending, lending to relatively opaque, risky borrowers, lending within low-income as well as high-income areas, lending over greater distances, or increasing the maturity of loans. Interestingly, the most significant increases in credit availability appear to be due to a reduction in lending costs though the application of rules that may reduce costs, rather than a reduction in informational opacity through use of SBCS with discretion although longer loan maturities are observed for these latter institutions.

A survey conducted by Cowan et al (2006) to investigate the factors that suggest that a bank will adopt credit scoring in the U.S. provide some evidence that for those banks using credit scores, credit is being extended to a broader distribution of small business borrowers. They find that approximately 53 percent of the respondents do not use any type of credit score for originating small business loans. Lack of confidence in the scores and unique loan aspects are given as the primary reasons for not using these scores. They also find that from other responses this lack of confidence relates primarily to business credit scores that depend to some extent on self-reporting by businesses. The use of business credit scores is limited to approximately 9.5 percent of the total survey respondents. In contrast to business credit scores, the remaining 43.5 percent of banks using credit scores continue to rely predominantly on the credit score of the individual owner for purposes of originating small business loans. In addition, Cowan et al (2006) finds that many banks use credit scoring for risk based pricing and in the process make loans to lower credit quality small businesses. Credit scores enable banks to charge risk adjusted premiums on these less creditworthy loans. The ability to price loans in such a manner makes the business profitable to banks and opens opportunities for more small businesses.

Cowan et al (2006) was able to further investigate the relationship between small business lending and credit scoring. They provide empirical evidence that suggests that banks increase their investment in small business loans relative to total loans subsequent to the adoption of credit scoring for small business lending. This finding suggests a potential improvement in credit availability to small firms over time banks continue to integrate this technology in their loan underwriting. They present some encouraging data for small business owners and lenders. Rather than limiting the

availability of credit, credit scoring appears to encourage lending to small businesses by providing banks with a quantifiable measure of risk. By eliminating some of the informational asymmetry inherent in these loans, credit scoring may increase the lending dollars available to small businesses. Although a more thorough investigation of the impact of credit scoring over time is needed, their results suggest that small businesses and banks alike will benefit from the integration of this technology in the lending process.

2.5 Summary of Literature Review

Despite the availability of credit scoring, the relationship of the business with the financial institutions including Saccos appear to continue to be the dominant factor considered in the lending decision. This finding is true regardless of size. Most of the studies reviewed in literature have focused on credit scoring in developed nations whose financial position is different from that of Kenya. The ones done in Kenya have focused on different industries other than the Saccos. Thus there is no literature focusing on credit scoring and loan repayment among Saccos in Kenya. This study therefore seeks to add literature on the efficacy of borrower credit scores in predicting credit repayment performance: a case study in agricultural finance corporation-AFC.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research design and methodology that was used to carry out the research. It presents the research design, the population, sample size and sampling procedure, data collection and analysis.

3.2 Research design

The researcher adopted a co relational research design which related the credit scores with a repayment performance of a borrower. This was an explanatory study where the research sought to establish a relationship between the use of credit scoring and credit repayment of a borrower. The study also used a census survey which was conducted using a survey questionnaire which was analysed using statistical methods. This was a cross sectional study that gave a snapshot of the current relationship of the data (Saunders et al, 2007).The researcher was able to draw a valid conclusion based on finding an association between Credit scoring model and the financial performance of the borrower.

3.3 Target Population and Sample Design

Mugenda & Mugenda (2003) define population as an entire group of individuals, events or objects having a common observable characteristic. The study population consisted of all 100 corporate clients who had been given loans by the Agricultural Finance Corporation (AFC) over a period of 5 years. This study used data collected through secondary sources such as the financial statements of a particular client in his file which formed the basis of giving the client loan as well as their credit scores. As

for inferential statistic, regression analysis was used to establish the relationship between credit scores and the financial performance of AFC loans. The target population was the loan portfolio of AFC. To actualize this, the study considered and selected all the corporate clients since they are few in number.

3.4 Data Collection

Secondary data was entirely used for the study. Secondary data collection technique involved use of the loanees credit scores contained in his file as well as AFC Financial statements over a period of five years. The financial statements gave information on the ability of a borrower to repay his loan. As part of the secondary data the loan performance which is also the loan portfolio performance over the years was used.

3.5 Data Analysis

For data analysis, the researcher used qualitative and quantitative technique (descriptive analysis technique) in analysing the data. The quantitative data comprised of the AFC portfolio loan default rate which was collected from its financial reports. As part of quantitative data, credit scores of the loanee were also included in the analysis. Data was then coded and grouped into various classes to enable the responses to be grouped into categories. For instance the credit scores of the loanee were grouped in to two distinct classes which consisted of High or Low, High ranging from 4-5 and low ranging from 1-3. Descriptive statistics were used mainly to summarize the data. This included percentages and frequencies. Descriptive statistics involved the use of absolute and relative (percentages) frequencies, measures of central tendency and dispersion (mean and standard deviation respectively).

Data was captured and analysed using Statistical Package for the Social Sciences (SPSS) version 21. Regression analysis was used to determine the relationship between credit scoring and repayment performance of a borrower. The Simple linear regression model was used to determine the nature of the relationship between credit scoring and the repayment performance of a borrower. 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;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Where Y = The repayment performance (This was calculated by taking the amount of loan repaid and dividing by the amount of loan to be repaid multiplied by 100)

X_1= The use of credit scoring of a particular borrower

X_2= GDP (An average of the monthly GDP rate for the period 2009-2013)

X_3= Inflation (An average of the monthly inflation rate for the period 2009-2013)

$\beta 0$ = was the Y intercept

ε = Error term

The coefficient of determination (R2) was used to measure the extent to which the variation in credit repayment performance is explained by the variations in its determinants. F-statistic was also computed at 95% confidence level to test whether there is any significant relationship between repayment performance and its determinants. This analysis was done using SPSS (V 21) software and the findings presented in form of a tables and graphs to aid in the analysis and with which the inferential statistics were drawn.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the information processed from the data collected during the study on the relationship between the borrowers' credit scores and the credit repayment performance in AFC. The sample composed of 100 corporate clients who have been given loans by the Agricultural Finance Corporation (AFC) over a period of 5 years.

4.2 Descriptive Statistics

Table 4. 1: Summary of the study variables

	Mean	**Std. Deviation**
Repayment performance	47.031	17.721
Credit score	2.941	1.402
GDP	4.071	0.236
Inflation	9.098	1.275

Source: Author (2014)

Table 4.1 presents a summary of the study variables for the period which was 2009-2013. The repayment performance had an average of 47.0313 with a standard deviation of 17.721, this indicates that the repayment performance fluctuated a lot during the period under study. Credit had a mean score of 2.941 and a standard deviation of 1.402. GDP rate had mean score of 4.071 with a standard deviation of

0.236 indicating that GDP rate had slight changes during the period under study. Inflation rate had an average of 9.098 with a standard deviation of 1.275.

4.3 Regression Results

The study conducted a cross-sectional multiple regression on several determinants over the period 2009 - 2013 and of repayment performance in AFC. Coefficient of determination explains the extent to which changes in the dependent variable can be explained by the change in the independent variables or the percentage of variation in the dependent variable (repayment performance in AFC) that is explained by all the three independent variables (The use of credit scoring of a particular borrower, GDP and inflation).

Table 4. 2: Results of multiple regression between repayment performance in AFC and the combined effect of the selected predictors

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.8895	0.7912	0.7364	0.7296

Source: Author (2014)

The three independent variables that were studied, explain only 73.6% of the repayment performance in AFC as represented by the adjusted R2. This therefore means the three variables contribute to 73.6% of repayment performance in AFC, while other factors not studied in this research contributes 26.4% of repayment performance in AFC. Therefore, further research should be conducted to investigate the other (26.4%) factors influencing repayment performance in AFC.

Table 4. 3: Summary of ANOVA Results

Summary of One-Way ANOVA results of the regression analysis between repayment performance in AFC and predictor variables.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12.223	3	3.112	3.671	.001
	Residual	92.876	96	.641		
	Total	115.099	99			

Source: Author (2014)

The probability value of 0.001 indicates that the regression relationship was highly significant in predicting the relationship between the borrowers' credit scores and the credit repayment performance in AFC. The F critical at 5% level of significance was 3.671 since F calculated is greater than the F critical (value = 2.70), this shows that the overall model was significant.

Table 4. 4: Regression coefficients of relationship between the borrowers' credit scores and the credit repayment performance in AFC and the three predictive variables

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.645	0.311		2.074	0.0447
	The use of credit scoring of a particular borrower	0.825	0.145	0.384	3.593	0.0304
	GDP	0.173	0.151	0.529	4.874	0.0186
	Inflation	-0.023	0.009	0.004	-2.556	0.0371
Dependent variable: Repayment performance in AFC						

Source: Author (2014)

The coefficient of regression in table 4.4 above was used in coming up with the model below:

RP = 0.645+ 0.825 CS + 0.173GDP- 0.023 Inf

Where RP is repayment performance, CS is Credit Scoring, GDP is Gross Domestic Product and Inf is inflation. According to the model, all the variables were significant as their significance value was less than 0.05. However, inflation was negatively correlated with repayment performance while credit scoring and Gross Domestic Product were positively correlated with repayment performance in AFC. From the model, taking all factors (The use of credit scoring of a particular borrower, GDP and inflation) constant at zero, repayment performance in AFC was 0.645. The data findings analyzed also shows that taking all other independent variables at zero, a unit

increase in the use of credit scoring of a particular borrower will lead to a 0.825 increase in repayment performance in AFC; a unit increase in the GDP will lead to a 0.173 increase in repayment performance in AFC and a unit increase in inflation will lead to a 0.023 decrease in repayment performance in AFC. This infers that the use of credit scoring of a particular borrower contributed most to the repayment performance in AFC followed by GDP while the inflation had a negative significant effect on the repayment performance in AFC.

4.4 Multicollinearity test

A situation in which there is a high degree of association between independent variables is said to be a problem of multicollinearity. Multicollinearity can also be solved by deleting one of the highly correlated variables. Heteroscedasticity means that previous error terms are influencing other error terms and this violates the statistical assumption that the error terms have a constant variance.

Table 4.5: Summary of Collinearity Statistics

Model	**Collinearity Statistics**	
	Tolerance	**VIF**
The use of credit scoring of a particular borrower	.937	1.068
GDP	.873	2.145
Inflation	.796	1.218

Source: Author (2014)

The Variance inflation factor (VIF) was checked in all the analysis and it ranged from 1 to 3 which is not a cause of concern according to Myers (1990) who indicated that a VIF greater than 10 is a cause of concern.

4.5 Normality test

Normality of the variables was examined using the skewness and kurtosis. According to Kline (2011), the univariate normality of variables can be assumed if the skewness statistic is within the interval (-3.0, 3.0) and the kurtosis statistic lying in the interval (-10.0, 10.0).

Table 4. 6: Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
The use of credit scoring of a particular borrower	2.943	37	.041	1.231	37	.021
GDP	2.153	37	0.03	1.532	37	.019
Inflation	2.270	37	.004	1.839	37	.012

Source: Author (2014)

From the finding on the Kolmogorov-Smirnovand Shapiro-Wilk test on normality, the study found that significance in both test were less than 0.05 which is leads to the rejection of the null hypothesis that that data on the use of credit scoring of a particular borrower, GDP and inflation were not normally distributed this is an indication that data on the variables were normally distributed.

4.6 CUSUM test for parameter stability

CUSUM test for parameter stability presented in the Figure below shows that the model is stable over time as it does not deviates from lines but is balanced on the line from one observation to another (that is there is no change in models parameters given

Harvey-Collier t(27) of 0.105681 with p-value 0.91660).

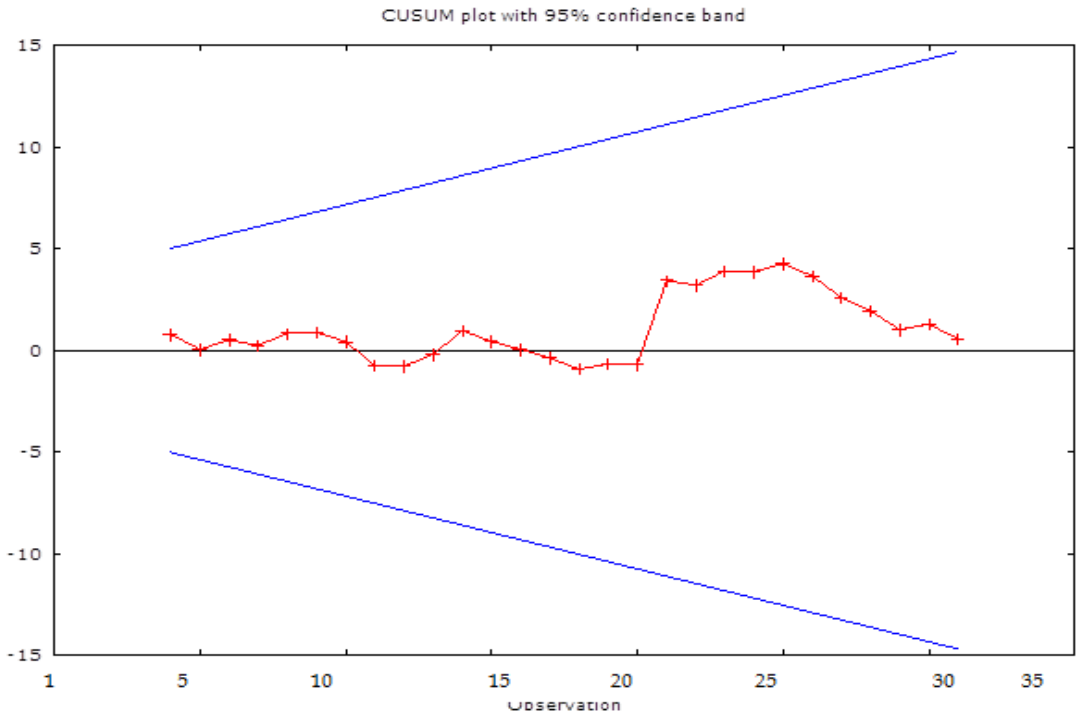

Figure 4.1: CUSUM test for parameter stability

4.7 Chow test for structural break

Chow test for structural break was done considering the 17th observation as the breakpoint. The test produced the following results: F(6, 22) = 0.415716 with p-value 0.8606. Chow tests the null hypothesis of no structural break. The p-value of f-statistics is 0.8606 is above 5%. The study, thus, fails to reject the null hypothesis, thus, there is no structural break in the data depicting that the model parameters are structurally stable.

4.8 Summary and Interpretation of Findings

From the above regression model, the study found out that there were factors influencing the repayment performance in AFC, which are the use of credit scoring of a particular borrower, GDP and inflation. The study found out that the intercept was 0.645 for all years.

The three independent variables that were studied (the use of credit scoring of a particular borrower, GDP and inflation) explain a substantial 73.6% of repayment performance in AFC as represented by adjusted R2 (0.7364). This therefore means that the three independent variables contributes 73.6% of the repayment performance in AFC while other factors and random variations not studied in this research contributes a measly 26.4 % of the repayment performance in AFC.

The study found out that the coefficient for the use of credit scoring of a particular borrower was 0.825, meaning that the use of credit scoring of a particular borrower positively and significantly influenced the repayment performance in AFC. This correlates with Brown, Falk & Fehr (2004) who posit that credit scoring improve banking relationships which can motivate high effort and timely repayments. Credit scoring facilitates quick loan turnaround, consistency in lending, and basis for risk pricing.

Fehr and Zehnder, 2005 posits that credit scores are useful in gauging the relative levels of risk posed by both prospective debtors and those with existing loans. Although the absolute levels of delinquency and default are low in all score categories, the proportion of problem loans increases as credit scores decrease. That relationship puts the focus of lending institutions concern on the prospective and existing borrowers with low scores because even small increases in the rate of default may mean the difference between profit and loss. For many lending institutions, evaluating and managing the risks of lending to non- traditional borrowers and the risks of allowing greater flexibility in underwriting are relatively new experiences. Banks should carefully evaluate the credit scores of clients before advancing loans to ensure a better loan repayment performance.

Orebiyi (2002) argues that the availability of information on past repayment behavior allows lenders to condition their offers on the borrowers' reputation. As borrowers with a good track record receive better credit offers, all borrowers have a strong incentive to sustain their reputation by repaying their debt. Therefore, by repeatedly interacting with the same borrower, lenders establish long-term relationships that enable them to condition their credit terms on the past repayments of their borrower. As only a good reputation leads to attractive credit offers from the incumbent lender, borrowers have strong incentives to repay. Thus credit scoring is very crucial in predicting the likelihood of borrowers to repay their loans and if implemented has a positive impact on loan repayment performance.

The study also deduced that GDP positively and significantly influenced repayment performance in AFC as it had positive coefficient (0.173). The result was consistent Gompers and Lerner (1998) who established that higher GDP growth implies higher repayment opportunities for entrepreneurs, which in turn lead to a higher need repayment performance. Bernoth, Colavecchio and Sass (2010) confirm the positive relationship between repayment performance and GDP.

The study found out that the coefficient of inflation to be negative (-0.023). This depicts that, according to findings, inflation negatively influences the repayment performance in AFC. This concurs with Parra-Bernal and Blount (2011) who states that Inflation has an adverse effect on the repayment performance as borrowers struggle to raise cash for repaying their loans due to the little money in circulation and the unwillingness of businesses to make investments to avoid losses.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter provides a summary, conclusion and recommendations of the main findings on the relationship between the borrowers' credit scores and the credit repayment performance in AFC. The chapter presents the discussions drawn from the data findings analyzed and presented in chapter four. The study was conducted by use of secondary sources such as published reports. The chapter is structured into discussions, conclusions, recommendations and areas for further research.

5.2 Summary of Findings

Institutions involved in lending face several risks such as financial risk, operational risk, economic risk, and credit risk like any other institution. However credit risk is one of the major risks within most institutions which are likely to make a company go under. To assess credit risk, lenders gather information on a range of factors, including the current and past financial circumstances of the prospective borrower, the nature and value of the property serving as loan collateral. Poor credit risk management practices leads to rising non-performing loans which compresses profit margins. The study sought to establish the relationship between the borrower credit score and its credit repayment performance. The researcher adopted a co relational research design which related the credit scores with a repayment performance of a borrower. This was an explanatory study where the research sought to establish a relationship between the use of credit scoring and credit repayment of a borrower. The study population consisted of all 100 corporate clients who had been given loans by the Agricultural Finance Corporation (AFC) over a period of 5 years. This study used data collected through secondary sources such as the financial statements of a

particular client in his file which formed the basis of giving the client loan as well as their credit scores. Secondary data collection technique involved use of the loanees credit scores contained in his file as well as AFC Financial statements over a period of five years. For data analysis, the researcher used qualitative and quantitative technique (descriptive analysis technique) in analysing the data. The quantitative data comprised of the AFC portfolio loan default rate which was collected from its financial reports. Data was captured and analysed using Statistical Package for the Social Sciences (SPSS) version 21. Regression analysis was used to determine the relationship between credit scoring and repayment performance of a borrower. The Simple linear regression model was used to determine the nature of the relationship between credit scoring and the repayment performance of a borrower. The study found out that there were factors influencing the repayment performance in AFC, which are the use of credit scoring of a particular borrower, GDP and inflation. The study found out that the intercept was 0.645 for all years. The three independent variables that were studied (the use of credit scoring of a particular borrower, GDP and inflation) explain a substantial 73.6% of repayment performance in AFC as represented by adjusted R2 (0.7364). This therefore means that the three independent variables contributes 73.6% of the repayment performance in AFC while other factors and random variations not studied in this research contributes a measly 26.4 % of the repayment performance in AFC. The study found out that the coefficient for the use of credit scoring of a particular borrower was 0.825, meaning that the use of credit scoring of a particular borrower positively and significantly influenced the repayment performance in AFC. The study also deduced that GDP positively and significantly influenced repayment performance in AFC as it had positive coefficient (0.173). The study further found out that the coefficient of inflation was negative (-0.023). This

depicts that, according to findings, inflation negatively influences the repayment performance in AFC. The study concludes that credit scoring has a positive significant influence on loan repayment performance in AFC.

5.3 Conclusions

The three independent variables that were studied (the use of credit scoring of a particular borrower, GDP and inflation) explain a substantial 73.6% of repayment performance in AFC as represented by adjusted R2 (0.7364). This therefore means that the three independent variables contributes 73.6% of the repayment performance in AFC while other factors and random variations not studied in this research contributes a measly 26.4 % of the repayment performance in AFC.

The study found out that the coefficient for the use of credit scoring of a particular borrower was 0.825, meaning that the use of credit scoring of a particular borrower positively and significantly influenced the repayment performance in AFC. This correlates with Brown, Falk & Fehr (2004) who posit that credit scoring improve banking relationships which can motivate high effort and timely repayments. Credit scoring facilitates quick loan turnaround, consistency in lending, and basis for risk pricing.

Fehr and Zehnder (2005) posits that credit scores are useful in gauging the relative levels of risk posed by both prospective debtors and those with existing loans. Although the absolute levels of delinquency and default are low in all score categories, the proportion of problem loans increases as credit scores decrease. That relationship puts the focus of lending institutions concern on the prospective and existing borrowers with low scores because even small increases in the rate of default may mean the difference between profit and loss. For many lending institutions, evaluating and managing the risks of lending to non- traditional borrowers and the

risks of allowing greater flexibility in underwriting are relatively new experiences. Banks should carefully evaluate the credit scores of clients before advancing loans to ensure a better loan repayment performance.

Orebiyi (2002) argues that the availability of information on past repayment behavior allows lenders to condition their offers on the borrowers' reputation. As borrowers with a good track record receive better credit offers, all borrowers have a strong incentive to sustain their reputation by repaying their debt. Therefore, by repeatedly interacting with the same borrower, lenders establish long-term relationships that enable them to condition their credit terms on the past repayments of their borrower. As only a good reputation leads to attractive credit offers from the incumbent lender, borrowers have strong incentives to repay. Thus credit scoring is very crucial in predicting the likelihood of borrowers to repay their loans and if implemented has a positive impact on loan repayment performance. The study therefore concludes that credit scoring positively and significantly influences credit repayment performance.

The study also found that GDP positively and significantly influenced repayment performance in AFC as it had positive coefficient (0.173). The result was consistent Gompers and Lerner (1998) who established that higher GDP growth implies higher repayment opportunities for entrepreneurs, which in turn lead to a higher need repayment performance. Bernoth, Colavecchio and Sass (2010) confirm the positive relationship between repayment performance and GDP. The study concludes that GDP significantly and positively affect credit repayment performance.

The study further deduced that the coefficient of inflation to be negative (-0.023). This depicts that, according to findings, inflation negatively influences the repayment performance in AFC. This concurs with Parra-Bernal and Blount (2011) who states

that Inflation has an adverse effect on the repayment performance as borrowers struggle to raise cash for repaying their loans due to the little money in circulation and the unwillingness of businesses to make investments to avoid losses. The study finally concludes that inflation negatively and significantly influences credit repayment performance.

5.4 Recommendations for Policy and Practice

The study recommends that AFC needs to use various credit scoring methods before availing loans to SME applicants. This in turn will improve the repayment performance of AFC. In addition, AFC needs to regularly review its credit policies as this will ensure that they don't lock out potential clients who can repay the loan and advance credit to clients who have a high risk of defaulting.

The study recommends that AFC should cooperate with other credit institutions to ensure that they get in depth information on clients before advancing loan to them. This will make it easy to know the credit history of a client and the repayment performance of individuals. In turn this will benefit AFC and will be important to help avoid a situation where they award loans to clients who have defaulted loans elsewhere.

The study recommends that the credit department at AFC be properly resourced and facilitated to visit the customers regularly. Reminders in form of text messages to customers' mobile phones and reminder letters are encouraged. This can be very crucial in boosting credit repayment performance.

The credit scoring process at times can be long and tedious and as a consequence scaring clients away to look for credit elsewhere. AFC should ensure that the credit scoring process is short but effective.

5.5 Limitations of the Study

There are challenges which were encountered during the study. Some officers who are concerned with safe custody of AFC files containing audit reports were initially reluctant to release them. That reluctance delayed the completion of data collection.

Time allocated for the study was insufficient while holding a full time job and studying part time. This was encountered during the collection of material as well as the data to see the study success. However the researcher tried to conduct the study within the time frame as specified.

Another limitation was developing a model which would enable a researcher to study the relationship between the various variables. When developing this model, there was a great need to define the dependent variables and independent variables. If the model is not correct, the process of analysis may not give the right results. In this case, multiple linear regression was used since there were multiple variables which required to be studied.

Further, the data was tedious to collect and compute as it was in its very raw form. The study is limited to data from the credit reference bureau which is insufficient as is limited to defaulters and not first time borrowers.

5.6 Suggestions for Further Research

Since the study focused on the relationship between the borrowers' credit scores and the credit repayment performance in AFC, further studies should be done on

commercial banks and micro finance institutions to find out whether the study will yield the same information.

More research needs to be carried out in other lending institutions such as Saccos and microfinance institutions and commercial banks to get an insight on various credit scoring models or methods used.

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Appendix I: Monthly GDP

	2009	2010	2011	2012	2013	Average
JAN	2.2	4.9	5.4	4.2	4.2	4.18
FEB	2.1	5.2	5.2	4.3	4.4	4.24
MAR	2.6	5.1	4.9	3.9	3.8	4.06
APR	1.9	5.4	4.4	4	4	3.94
MAY	2.7	5.3	4.3	3.6	3.4	3.86
JUN	2.9	6.1	4.2	4.2	4.2	4.32
JUL	2.6	5.6	3.9	3.3	3	3.68
AUG	2.4	5.8	4.1	3.6	3.3	3.84
SEP	2.6	6.1	3.9	3.6	3.3	3.9
OCT	2.8	6.2	4.4	4.3	4.3	4.4
NOV	3.2	5.7	4.1	3.7	3.5	4.04
DEC	3.5	5.4	4.9	4.2	4	4.4